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January 10, 1949

STEEL

JAN 8 1949

The Magazine of Metalworking and Metalproducing

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GROWING IN NATIONAL IMPORTANCE

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Cut Costs

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Behind the Scenes...

Important Series

Nearly missed in the shuffle of holidays and the Yearbook of Industry, which still has us a little gaspy, was the inauguration of one of the most important series of articles ever to appear in STEEL. With a few momentary breaks, the series on "Fundamentals of Steelmaking" will run consecutively through all of this year and probably a part of 1950. When complete, the series will have covered all phases of the subject, each part prepared by a leader in his field. The first of the series, covering electric furnace steel, ran in the two last issues of 1948. The second, covering scrap, you'll find in this week's book. It's by E. C. Barringer, who is well known as the executive head of the Institute of Scrap Iron and Steel, and who was formerly managing editor of this magazine. Ed Barringer is as well informed on the subject of scrap as any man in this country, and you'll find his material well worth studying. Beginning next week is an outstanding article on the open hearth, authored by L. F. Reinartz of Armco Steel Corp. Like all the other authors in this series, Mr. Reinartz is a recognized authority on his subject, and our editors believe his material will rank among the best treatises ever prepared on the number one steelmaking tool. Make a mental note not to miss it!

A Half Century Back

Current activities of the sections of our government interested in big business and the workings of the antitrust laws are in sharp contrast to the news reported in STEEL just fifty years ago. The big news in our issue of January 12, 1899 was the formation of the American Steel & Wire Co., and to quote our editors, "The practical control of the rod, wire and wire nail production of the country lacks only some transfer formalities to become a fact" and in the New York Stock Exchange, somebody made a million dollars plus by selling 100,000 shares of American Steel and Wire at 109, after buying it a few days earlier at 92. On the metallurgical front, one Dr. Gatling had invented a steel gun which was being tested at Sandy Hook. Unfortunately, the steel barrel burst after the fifteenth round, Dr. Gatling expressed confidence, however, that some alloy steel can be developed which will be strong enough for an 8-inch gun barrel. And, on the same date, an official of the Pennsylvania Railroad, stated that 100 pound rail would shortly be substituted for 85 pound rail on the main line. In that issue, we note among our advertisers the Harrington & King Perforating Co., The Bristol Co., and the Chicago Rawhide Mfg. Co.; and we find among the products advertised horse shoes and cruises on the Great Lakes.

We've Been Seaing Horses

Editors as a group are well pampered individuals who receive all sorts of impelling items. These include a lot of free literature, gimmicks, gadgets, junkets, and the like. They also occasionally are made members of many different organizations. One of the newest and most intriguing of these organizations has conferred membership, complete with badge, upon Irwin H. "Pinky" Such. Our Mr. Such is (ahem) a full fledged member of the Sea Horse Institute, and he has a solid genuine nickel sea horse to prove it. This horse, which is fully an inch long, is the official badge of membership. It has been conferred, according to the text accompanying it, to prevent Sea Horses from getting mixed up in greeting one another. The whole deal was cooked up by Frank La Que of International Nickel Co., which explains why we carefully pointed out the genuineness and solidity of the badge. To qualify for membership in this unique organization, one has to have attended the sessions on marine corrosion held by the Nickel company at Kure Beach. The whole deal is a neat bit of promotion for that excellent project, reports of which you have seen in our pages during 1948.

Wanna Join?

In response to tremendous pressure from a substantial segment of our army of loyal readers, we are going to attempt to prevail upon Cmfwyp, our zinc-line camera man, to prepare a suitable certificate for all of you who claim to be our 205th reader. Seems like every reader we have takes a personal delight in discrediting polls, particularly the one which showed there were 204 readers of this colyume. So, all of you who are our 205th reader, write in and give us your name and address and we'll duly enroll you as such. He probably won't like it (our Mr. Such, that is) when he finds out how many suches there are!

Shrdlu

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STEEL

Vol. 124—No. 2 January 10, 1949

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How To Apply Titanium Enamel To Titanium Steel

Use of Hardness Data Restricted

Color in Industry Found To Have Practical Benefits

Production of Open Hearth Steel

STEEL

The Magazine of Metalworking and Metalproducing

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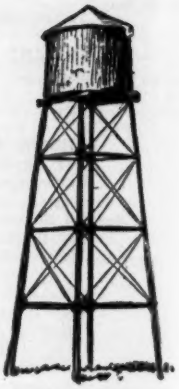
★ Denotes Regular Features

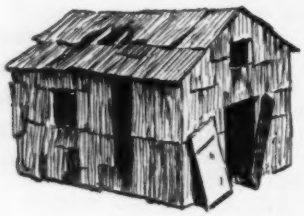
HOW MUCH PRESSURE IS PUT

on SCRAP-COLLECTIONS in your plant?



Scrap collections warrant determined action by top-level management, because output of virtually everything from adding machines to zephyr cloth is jeopardized by the continuing acute scrap shortage.

Take a good look around your plant . . . comb your entire property for broken, worn-out or obsolete machines . . . discarded line shafting . . . unusable girders . . . old chain . . . every sort of scrap metal.



Consult your local scrap dealer for advice on types, grades and sizes.

The amount of steel available depends upon the tonnage of scrap turned in. Everyone is affected by the scrap situation, and now is the time for each individual to get every available pound of scrap back to the mills.

★

MORE SCRAP—MORE STEEL

Move your scrap to the mills

SELL IT—SHIP IT—MOVE IT NOW!

EMBLEM OF INCO SERVICE TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET
NEW YORK 5, N. Y.

January 10, 1949

Naive As To Method

President Truman's "State of the Union" message to Congress ran true to form in most respects. As was to be expected, he repeated most of the requests he had made to the 80th Congress. Also, his program conforms closely enough to his campaign promises to satisfy those who voted for him.

On the other hand, he presented so many unrelated proposals and phrased them in such general terms that Congress will find it extremely difficult to put even a small portion of his program into effect in a way that will achieve his avowed objectives. Mr. Truman was fairly specific in saying what he hopes to accomplish but was extremely vague as to the means by which his goals are to be attained.

In the one instance in which he went into some detail as to method, he betrayed a weakness which probably is characteristic of much of his entire program. After talking about the need of more low-cost housing—to which every right-minded individual will agree—he hinted at this method of obtaining low-cost housing:

"The authority which I have requested, to allocate materials in short supply and to impose price ceilings on such materials, could be used, if found necessary, to channel more materials into homes large enough for family life at prices which wage earners can afford."

This naive statement shows a complete disregard of the painful lessons of OPA and of the operation of our economic system. Allocating scarce material to housing and imposing price ceilings would produce low-cost housing only under one condition—namely, that practically everything going into home construction, including wages, would be placed under strict government control. There is no half-way method. The alternatives are complete controls or none.

This illustration of a single detail involved in one of Mr. Truman's 30 or more "fair deal" proposals indicates the complexity of the problems that Congress will encounter in drafting legislation demanded by the President in his message. The 81st Congress is not likely to be a "rubber stamp" body. For this and other reasons, industry can be hopeful that many of the potentially dangerous proposals in the message will be toned down or eliminated in debate.

* * *

SENSIBLE EXPANSION: It happens that the advertisements of Jones & Laughlin Steel Corp. in newspapers and magazines announcing its $210,000,000 expansion program appear at about the time President Truman is asking Congress to study the advisability of granting government loans to expand steel capacity and Montana's Senator Murray is all set to introduce a bill in the 81st Congress to authorize a government-sponsored steel expansion program.

The J & L ads state that the company "is plowing earnings back into the business, plus other cash borrowed on future earnings . . . to meet demands for more steel." As a result, the ads state, J & L customers will get more and better steel; its employees will have greater security, higher earning possibilities and more jobs; its stockholders will have a safer and more profitable investment; and all Americans will enjoy greater national security and better living."

We believe this ad provides a blueprint for the most sensible way of increasing the na-

(OVER)

AS THE EDITOR VIEWS THE NEWS

tion's steel capacity to its proper level. It is the formula of private risk which has made this country the only nation in the world that is capable of helping its less fortunate neighbors. The Truman and Murray proposals, if followed, might lead us to the plight of nations which now seek our help.

Now is a good time for every company to inform the public of what it is doing to expand capacity or improve facilities. There is no need to risk the grave dangers involved in government aid. —pp. 28, 29, 42

* * *

BUSSES REPLACE CARS: Urban transit is an important factor in the American standard of living. It has been undergoing radical changes in recent years. Motor busses and trolley coaches have been increasing at about the rate that the traditional street car has been declining.

In 1926 the nation's city transit systems possessed 62,857 street cars and 14,400 motor busses. In 1947 the count was 21,607 street cars, 56,917 busses and 4632 trolley coaches. Much of the demand that went unsatisfied during the war has been supplied since V-J Day. Right now orders are lagging because of the poor earnings of transit systems and manufacturers are beginning to cultivate export markets with renewed vigor. Demand from Latin-American countries is good and would be even better if conditions of dollar exchange were more favorable. —p. 37

* * *

BRIDGE BUILDERS BUSY: In a year-end review of activity in the fabricated structural steel industry, N. R. Patterson, president of the American Institute of Steel Construction, states that more steel bridges were under construction at the end of 1948 than at any time in a decade. Of 2068 steel bridges under way, 164 were for railroads and 1904 for highways. More than 1400 of these were in the central and southern sections of the country.

Tonnage of fabricated structural steel going into bridges and buildings in 1948 totaled 1,930,000 tons. The industry has capacity to fabricate and erect well over 2 million tons in 1949. A moderate slackening in demand for industrial buildings is expected, but this shrinkage will be more than offset by the structural steel requirements for stores, office buildings, public buildings and highways and bridges. Availability of steel may be a limiting factor. —p. 37

* * *

SIMPLE WAY IS BEST: Anent simple ways to solve difficult problems, probably everybody has heard the story of the lad who came upon a group of men trying to extricate a large truck which had failed to clear the girders of an over-pass by a few inches.

The boy started to offer a suggestion, but the exasperated truckmen chased him away. Returning later, he found them still stymied. Again he offered advice. This time one of the men asked "Well, what would you do?" "I'd let some air out of the tires," he replied. They tried it. It worked.

In moving a 138-ton press from Muncie, Ind., to Detroit, Chevrolet found it necessary to lay the press flat on its back for shipment. To do this with cranes is tricky. Instead, workmen stacked 350 cakes of ice behind the press and tilted it backward against the ice. As the ice melted, the press slowly sank to the desired horizontal position. —p. 40

* * *

ABC OF FERROUS SCRAP: Second article in this publication's series on the fundamentals of steelmaking is on the timely subject of scrap iron and steel. It is written by Edwin C. Barringer, executive vice president of the Institute of Scrap Iron & Steel, Inc., who has done an outstanding job of presenting within the limits of five pages one of the clearest statements on the origin, preparation, distribution, marketing and use of ferrous scrap that has appeared in print anywhere.

In important statistics accompanying Mr. Barringer's article, one notes that whereas the ratio of total scrap to pig iron charged in all types of furnaces declined from 56.3 per cent of scrap and 43.7 per cent of pig in 1935 to a low of 49.1 of scrap and 50.9 of pig in 1940, the ratio has moved up to 53.3 per cent of scrap and 46.7 per cent of pig in 1948. Consumption of home and purchased scrap in 1948 is estimated at 57,340,000 gross tons—an all-time record. —p. 76

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

WHAT'S AHEAD—Economic soothsayers in yearend appraisals of the general business outlook see a mild easing, with volume dropping possibly 5 per cent from 1948. While most of the decline is expected to occur in soft goods, where the bloom definitely is off the boom, a new note of caution is evident in the steel and metalworking industries. Although pressure for steel from the mills continues unabated, belief that a supply-demand balance may be achieved this year is gaining (p. 25).

HOW MUCH REARMAMENT— The same forecasters expect expanding defense requirements will help bolster the economy as civilian demand recedes. A check of metalworking companies indicates this dependence on rearmament needs may be over-emphasized. Few companies outside the aircraft industry have or anticipate any large volume of defense work. If the defense budget is held to $15 billion for fiscal 1950, important increases in awards to metalworking companies appear unlikely (p. 26); peacetime procurement of materiel will not bulk large against the metalworking industry's current $71 billion volume.

STEEL EXPANSION—President Truman's message to Congress touched off anew the old controversy on whether the government should get into the steel business by financing new plant expansion. The administration has powerful supporters for this scheme and much will be heard about it during coming months (p. 29). Supply and demand may be in balance before the plan's proponents finish talking and hearings are completed.

30-HOUR WEEK— Scattered layoffs in business and industry have revived organized labor's campaign for a shorter work-week. American Federation of Labor has a watchdog committee ready to agitate for a 30-hour week should unemployment become a serious problem (p. 28).

BUS BUILDERS LOOK ABROAD—Weary transit riders may not believe it, but the manufacturers of motor busses, trolley coaches and street cars have a surplus of capacity (p. 37). They are looking for business in other lands, as result of decline in operating income of American transit systems which prohibits purchase of all the new equipment needed. South America is becoming a more important market.

BUSINESS OVERSEAS—Planned deflationary program in Germany, designed to curb the spending spree set off by last summer's currency reform, is slowing customer payments; industrial production, however, is not affected (p. 35). Belgium's exports are falling as result of currency difficulties. In France, productivity still is far below prewar. On the other side of the world, Japanese workers are tightening their belts against inflation which has sent prices up 60 per cent in the past year. India's steel production is lagging and is far below the volume required for that nation's economy.

PRICING—A bill to legalize freight absorption by manufacturers within certain limitations has been introduced in Congress by Senator Johnson as the first legislative proposal to clarify the pricing muddle which has existed since the Supreme Court handed down its cement case decision (p. 30).

HERE AND THERE IN INDUSTRY—An interim 5 per cent increase in freight rates (p. 31) has been authorized by the Interstate Commerce Commission . . . Jones & Laughlin is telling the story of its $210 million expansion program to the public (p. 42) in newspaper and magazine advertisements . . . October steel exports reversed the recent trend (p. 30), gained 35,000 tons over preceding month . . . Bridge construction last year (p. 37) reached the highest level in a decade . . . New models of leading automakers will be shown this month (p. 39), with Chevrolet, all Chrysler lines, Studebaker and Kaiser-Frazer participating . . . More industrial participation in the development of atomic energy is advised by the advisory committee of the Atomic Energy Commission (p. 32) . . . A four-man mission representing the scrap and steel industries is enroute to the Far East to investigate the availability of heavy ferrous scrap in Japan.

Inland Steel, too, Is Made to *Your* Specifications

• Your corner pharmacist takes pride in compounding your prescriptions carefully and accurately. We at Inland Steel deal in prescriptions, too—your *steel* prescriptions. Being a completely integrated and independent steel company, we are able to supply steel to meet the specific requirements of your job . . . to act quickly when fast action is necessary . . . to maintain a friendly, personal interest in your steel problems . . . and to follow your steel order carefully, step by step, through each phase of production.

INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill.
Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, and St. Paul.

INLAND STEEL

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SHEETS • STRIP • TIN PLATE
FLOOR PLATE • PILING • RAILS
TRACK ACCESSORIES

. . . and
This "Inland Team"
Gives Your Steel
Their Personal Attention

METALLURGY SALES OPERATIONS

STEEL
A PENTON PUBLICATION

Industry Optimistic, but Cautious

Metalworking executives generally anticipate active period ahead, despite soft spots in some items. Pressure on steel mills unabated, although balance may come this year

HOW MUCH, if any, recession will be experienced in 1949 by the metalworking and metalproducing industries?

Will the soft spots which have been appearing in the nondurable goods and some consumer durable goods extend into other lines? Will steel supply and demand come into early balance? Will an expanding rearmament program bolster the economy when the postwar boom spends its force?

These are the questions being asked among metalworking executives. They are prompted by a new note of caution contained in yearend economic appraisals, by scattered layoffs of workers, by a slight lessening in demand for gray market and conversion steel at premium prices, and by memories of how large order backlogs melted away in 1930 and 1937 like snow under a warm rain.

No Pessimism—A survey in major metalworking centers by STEEL's district editors reveals no pessimism. There is an alertness to possible sudden change, an acknowledgement that many pipelines are filled or nearly so, that resistance to high prices is increasing, and an expectation that demand in some lines of end goods will be lower than last year.

Sales offices of steel producers generally can see no easing in demand for finished steel products. Pressure from customers is just about as insistent as it has been at any time since the end of the war. The sales chiefs expect that whatever easing in demand develops later in particular lines will be absorbed by other customers.

Notably absent are reports of cancellations or reductions in steel orders, even among those customers which are known to have cut back production during the latter part of 1948. Steelmen believe these companies are continuing to take their full quota of steel products to build up comfortable working inventories.

Some easing in demand for conversion steel is noted, although most suppliers report demand for conversion ingots still exceeds supply.

Buyers a Little More Cautious—Some metalworking companies are tempering their optimism, as contrasted with the buoyancy of steel salesmen. Some already have experienced a falling off in demand and are resigned to a lower volume in 1949. Other companies report that operations are continuing at capacity, but that order backlogs are declining. Still others, and automakers are the outstanding example, are producing at as high a rate as materials will permit and have order backlogs extending many months ahead.

Many metalworking companies report that available steel supplies are the principal limiting factor in their production.

How Much Defense Work—A standard provision in the recent yearend forecasts was a statement that expanding defense work would be a major factor in taking up any slack developing in the civilian economy. STEEL's survey shows relatively few companies engaged in armament work and few having definite expectation of getting any considerable volume of such business this year.

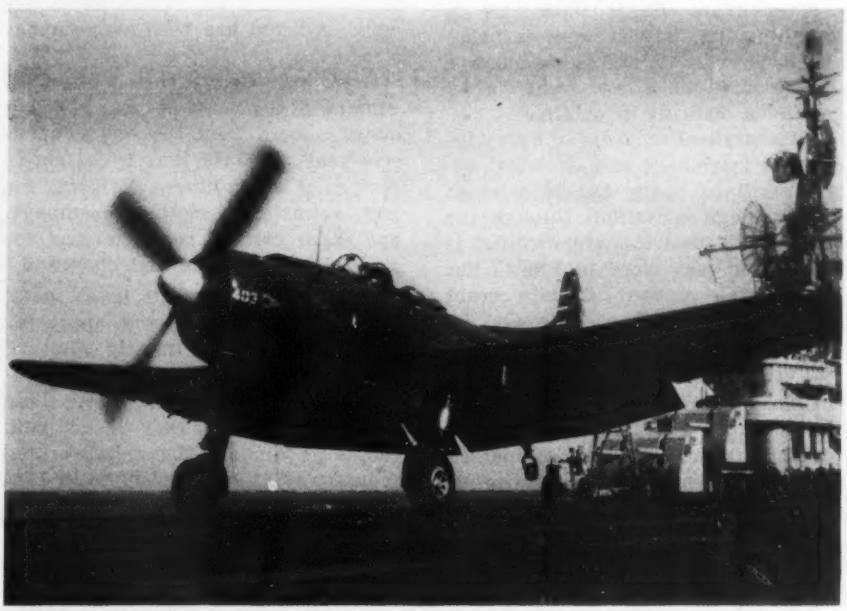
District by district, the steel and metalworking outlook is:

Detroit—Demand for finished steel continues basically strong, although pressure for high-priced conversion tonnage is easing. Despite the strong market, there is a greater inclination to "keep fingers crossed" until Washington policies are more clearly defined, as well as increasing recognition of soft spots developing in automobile sales. From motor company headquarters comes a drive for still higher assembly schedules. Suppliers of original equipment and parts are urged to step up production. Many suppliers report full order books through the first half and beyond.

Cleveland — Metalworking operations are continuing at a high level, although a few companies making appliances and electric motors have curtailed production as supply balanced demand. Others are working at capacity, but backlogs are declining. Some believe steel will be easier to obtain by mid-1949.

A considerable number of metalworking executives welcome the prospect of some easing in the business picture, arguing that it will help bring sanity back to the market place and re-emphasize the need for close attention to efficient business methods, particularly as regards costs and sales effort.

Los Angeles—Metalworking execu-



New Navy attack plane, the Martin Mauler, takes its carrier qualification tests from the decks of the USS Kearsarge. The plane is a combination dive-bomber, torpedo-bomber and rocket plane. Speed exceeds 300 miles an hour. NEA photo

tives see no recession for 1949. They believe softening of production in consumer lines will simply divert needed materials to other fields with general demand remaining high. However, they anticipate decline in gray market activity, more price consciousness, less scrambling for steel, plus more cautious forward buying. This adds up to return to normalcy, but no recession.

New York—Metalworking shops in the East continue to be handicapped more by the lack of steel and other metals than by lack of new business. However, some consumer durable lines have slowed down to a point where pressure for materials is less pressing. This applies to some stamping shops and tool jobbing plants.

Continuing active are the plants making special purpose machinery, aircraft instruments, hydraulic tools and rotary pumps. Typesetting and paper cutting machinery manufacturers are tending upward.

Boston—Although not reflected at the steel mill level, business activity in New England is definitely slower. Two major industries, textiles and shoes, have been on the decline for some time. Downward trend in metalworking plants is less apparent, although scattered suspensions of steel shipments are reported.

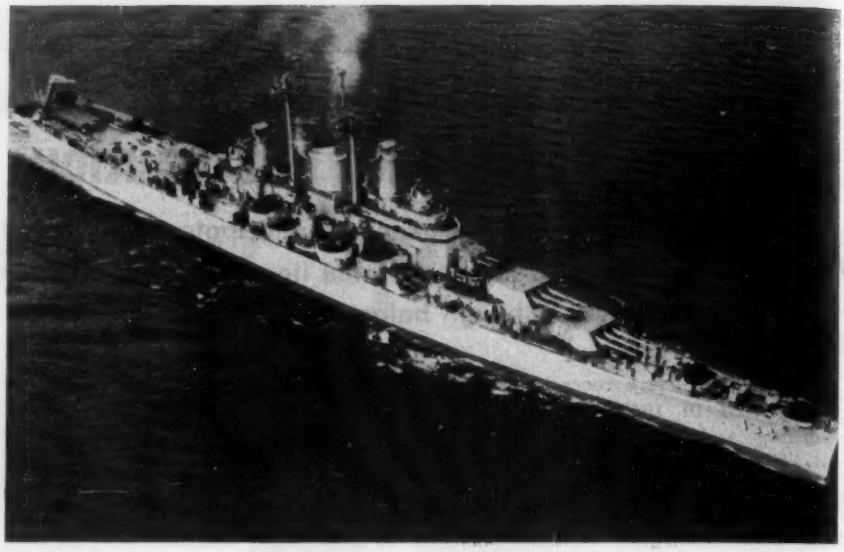
Domestic watch manufacturers are suffering from Swiss competition. The Gardner-Wakefield area, baby carriage, furniture and consumer goods center, is depressed. Makers of large electrical equipment are fairly active. Textile machinery orders are good, with many for foreign account.

Birmingham—Slight slackening in metalworking activity here is believed to be seasonal and is expected to disappear within a few weeks. Steel continues difficult to obtain.

Pittsburgh—Producers of heavy industrial machinery and electrical apparatus have heavy backlogs which promise high operations through the year. Small electric motor demand is off 30 per cent from 1947 level but still is triple prewar. Despite recent softening in appliance demand, a leading producer predicts 1949 sales will drop only 2 per cent.

Chicago—Greater competition for the consumer's dollars is anticipated by Chicago metalworking companies, which are planning greater sales efforts and increased attention to design and pricing of products.

Youngstown — Frank Purnell, Youngstown Sheet & Tube Co. president, sees a good year for steel, but a somewhat lower volume of business than in 1948. He believes the acute steel shortage will end in 1949.



Heaviest cruiser in the U. S. fleet is the USS Des Moines, which has just been commissioned. It is the first ship to mount completely automatic rapid-fire, 8-inch guns. Two sister ships will join the fleet within a few months. NEA photo

Are Defense Orders Over-Emphasized?

Rearmament orders only small portion of metalworking industry's total volume. Emphasis is on preparedness for production rather than actual output of material

DEFENSE orders held by metalworking companies constitute only a small portion of their total volume. Many companies have no orders and no prospects of getting any. Others are devoting only a minor portion of their capacity to such work.

This suggests that the belief rearmament orders will bolster the national economy as civilian needs become satisfied has been over-emphasized.

Although the defense budget is running at a peacetime peak and is a quarter more than the most expensive year of World War 1, the major portion of expenditures are going for pay, subsistence, clothing, equipage, and other care of personnel and for general maintenance and operation.

During the current fiscal year, about $3 billion is being spent for aircraft and ships, mostly aircraft, and some $700 million for other procurement for production. While these are sizable figures, they do not bulk too large against the metalworking industry's $71 billion volume in 1948 and are dwarfed by the expenditures for materiel during the recent war.

Few Major Projects Pending—A check of metalworking companies reveals that not many are counting heavily on defense business. In Detroit, military orders among automakers are of no great consequence. One manufacturer recently obtained a rush order for army trucks; these were of a standard type and only required an olive drab paint job. At the Detroit Arsenal, about 2300 are working on a program of reconditioning and refitting medium tanks returned from battlefields. The large General Patton tank is scheduled to go into production by spring and will provide some substantial orders for parts, equipment and tooling. Included is an $18 million order for engines placed with Continental. Allison Division of GM is busy on turbojet and turboprop engines for aircraft.

In Chicago area, military purchasing is intruding on normal business only in a minor way. Major work being done is on aircraft components. Artillery production at the Rock Island Arsenal is nearly dormant, with 1800 persons working a 40-hour week.

Although metalworking executives hear hints of work to come, few have definite knowledge of pending work.

Large Increases Doubtful — While the size of the new defense budget remains to be decided, President Truman has indicated he will seek to hold a $15 billion ceiling. That would compare with $13,481,000,000 appropriated—and mostly spent or obligated—in fiscal 1949.

Thus the influence of defense work on metalworking companies likely will be little more than at present as

much of the increase would go for higher pay and increased cost of subsistence.

Otherwise the pattern of spending may be expected to remain about the same as at present, namely:

	Billions
Pay	$4.135
Subsistence	.573
Clothing and equipage for individuals	.261
Hospitalization, travel, etc.	.395
Aircraft procurement (Air Force and Navy)	2.714
Procurement of ships	.280
Other procurement for production	.736
Stockpiling	.525
Fuel and oil	.336
General maintenance and operation	3.218
Military public works	.259
Industrial mobilization and planning	.049
Total	$13.481

Half Billion for Research, Development—The above breakdown is only partially explanatory due to the difficulties of budgeting on such a grand scale. For example, STEEL has learned that expenditures by the armed services for research and development last year amounted to $567 million, which is included in a number of the items in the above breakdown.

Preparedness — Procurement policies are likely to continue along present lines. There will continue to be off-the-shelf buying, contracts for production, and contracts covering research and development work. The purpose will be maintenance plus preparation for quick mobilization in the event of an emergency.

Pipeline Project Opposed

Steel allocation for East Tennessee line opposed by spokesmen for coal mining industry

SHARP objections to allocation of steel for the proposed East Tennessee pipe line were expressed at the Commerce Department's recent public hearing on this project.

Sumner Pike, member of the Atomic Energy Commission, said the pipeline was essential to bring natural gas as an alternate fuel to the commission's plant at Oak Ridge, Tenn., the only facility in this country for producing Uranium 235.

Opposition came from the United Mine Workers and the National Coal Association which held the coal industry can take care of all Oak Ridge requirements. The miners' union held that possible unemployment of coal miners was threatened needlessly.

Another objection came from Fletcher Plumley, Reynolds Metals Co., who said diversion of scarce steel pipe to this project would delay expansion of aluminum production at the Reynolds plant at Jones Mill, Ark.

Given Additional Time — Acting Director Earl Clark of the Office of Industry Cooperation allowed the United Mine Workers until Jan. 13 to get additional material into the record. At that time the record would be closed, he said, and referred to Secretary Charles Sawyer for final determination. The Oak Ridge pipe line calls for 4750 tons of steel pipe.

Final meeting of the Steel Products Advisory Committee—until such time as Congress acts on future steel distribution controls — will be held Jan. 12. Principal proposals scheduled included: 1—Extension of the mining machinery allocation agreement and a slight increase in the tonnage involved; 2—extension and a slight tonnage increase in the agreement covering maintenance of anthracite mines; 3—a steel rail allocations agreement; 4—a farm grain storage bin program to involve something less than the 50,000 tons of galvanized sheets originally asked; 5—possible allocation of steel to obtain greater production of line pipe and oil country tubular goods in line with recent requests of the Interior Department.

Gray Iron Outlook Favorable

ESTIMATE of 1949 output for the gray iron foundry industry is placed at not less than 11 million tons by Gray Iron Founders' Society, Cleveland, provided no unforseeable general business slump develops. Gray iron foundry products shipments for 1948 are expected to be at about the same level as they were in 1947 when 12.5 million tons were produced. Industry backlogs were reduced materially during the year just past but orders totaling well over 2 million tons are still on books.

According to the association, the major problem of the industry during 1948 was procurement of satisfactory raw materials. Measurable improvement had taken place by the year end and while prices, especially scrap, remain high the outlook is for an easing of raw materials scarcities in 1949.

MONTHLY STEEL REQUIREMENTS OF VOLUNTARY ALLOCATIONS PROGRAMS

(Net Tons)

	Plates	Structurals	Hot-Rolled Bars	Sheets, Strip	Pipe	Axles, Wheels, Billets	Ingots, Slabs	Coated Sheet & Strip	Seamless Tubing	Cold-Finished Bars	All Other	Total
Freight Cars*	111,347	53,640	32,885	22,309	2,961	23,415	.....	3,125	....	..	...	249,682
Armed Forces*	13,470	11,370	18,780	19,300	9,540	210	11,140	2,980	4,505	5,920	5,290	102,505
Tankers*	32,011	5,265	1,041	288	1,488	.....	.....	287	....	....	...	40,380
Barges*	17,700	6,500	300	150	350	.....	.....	....	....	....	....	25,000
Tank & Oil Field*	6,573	254	1,019	8,030	654	.....	.....	..	..	....	.	16,530
Atomic Energy*	2,730	2,868	3,653	291	2,810	.....	.....	418	1,753	....	1,891	16,414
Merchant Vessels*	11,143	1,905	670	421	757	.....	.....	519	....	....	....	15,415
National Advisory Committee for Aeronautics*	575	600	540	.....	114	.....	.....	86	....	....	11	1,926
Mining Machinery (1)	7,165	6,560	7,100	3,765	375	.....	485	....	720	230	....	26,400
Oak Ridge Pipe Line (1)	.....	.....	.....	.....	4,750	.....	.....	.....	.....	.....	.....	4,750
Manganese Ore Cars (1)	1,025	445	.....	722	.....	.....	.....	.....	.....	.....	.....	2,192
Total New and Extended Programs	203,739	89,407	65,988	55,276	23,799	23,625	11,625	7,415	6,978	6,150	7,192	501,194
Warm Air Heating (2)	.....	.....	.....	18,987	.....	.....	.....	10,135	....	....	....	29,122
Steel Houses (2)	.....	.....	.....	9,625	.....	.....	.....	210	....	....	....	9,835
Anthracite Coal Industry (3)	550	.....	.....	750	860	.....	.....	410	....	....	....	2,570
Totals	550	.....	.....	29,362	860	.....	.....	10,755	....	....	....	41,527

* Programs now in effect and recommended for extension from Feb. 28, 1949, to Aug. 31, 1949.
(1) New programs effective Feb. 1, 1949, to Aug. 31, 1949.
(2) Programs now in effect but not recommended for extensions.
(3) Program considered for extension.

Congress Faces Big Task

Truman's program of social and economic legislation may be in for some modification

IMMEDIATE congressional reaction to President Truman's State of the Union message last week was mixed. While a good part of the program appears slated to go through without too much difficulty, still it seems likely considerable delay will be met in enacting into law certain of the President's suggestions.

At any rate, a number of influential congressmen indicated the President would have to spell out in more detail some of his recommendations.

The President's program as outlined in his message was about in line with expectations. He asked for:

Four billion dollars additional taxes, comprised of a boost in the corporate rate, revised gift-estate levies, and higher personal rates on middle-upper bracket incomes. He made no mention of excess profits taxes.

Adequate farm price supports.

Repeal of the Taft-Hartley Act and enactment of a revised Wagner Act banning jurisdictional strikes and secondary boycotts; suggested that means be provided for settling or preventing strikes in vital industries which affect the public interest.

Price Controls—Standby price control authority over commodities which affect industrial production or the cost of living.

Wage controls in industries in which price ceilings are imposed.

Authority to regulate commodity exchange speculation.

Authority for the government to construct facilities to produce steel or other materials in short supply.

Power to allocate and grant priorities for key materials, particularly in the housing field.

Seven-year housing program to provide 1 million low-rental dwellings.

Extended consumer credit control and strengthening of rent control.

Enlarged authority to control bank credit.

Strengthened anti-trust laws to curb monopoly.

A system of prepaid medical insurance.

Civil rights program.

Aid to education.

Boost in minimum wages from 40 cents to at least 75 cents an hour.

Universal military training.

Extension of the Reciprocal Trade Agreements Act.

Extension of social security.

Program for planned use of petroleum reserves under the sea.

Soil conservation.

Rural electrification, etc.

Action To Be Slow—That Congress will move slowly in acting on social security and tax measures was made clear by Chairman Doughton of the powerful House Ways & Means Committee following the President's address. This committee will first take up the Reciprocal Trade Agreements Act which expires June 30. Whether social security legislation and tax legislation would be taken up next is not certain, but Chairman Doughton emphasized that both of these problems would require lengthy study. With respect to taxes, it is known there is no agreement as yet within the administration as to just what specific tax proposals should be made to Congress.

An influential congressman expressed the view that some trouble would be experienced in putting through legislation giving the President the economic controls he wants, and to inaugurate a national health insurance scheme.

Indications are legislation amending the anti-trust laws will be taken up late in the current session of Congress. Representative Spence of Kentucky said he wanted the administration to spell out a little more fully its ideas on rent controls, standby price controls, allocation controls and other suggestions of the President.

Shorter Work-Week?

Unions revive talk of 30-hour week to spread employment as economy begins to slow down

TALK about a shorter work-week, largely dormant since the outbreak of World War II and the advent of continuing high employment levels, again is being heard in labor circles.

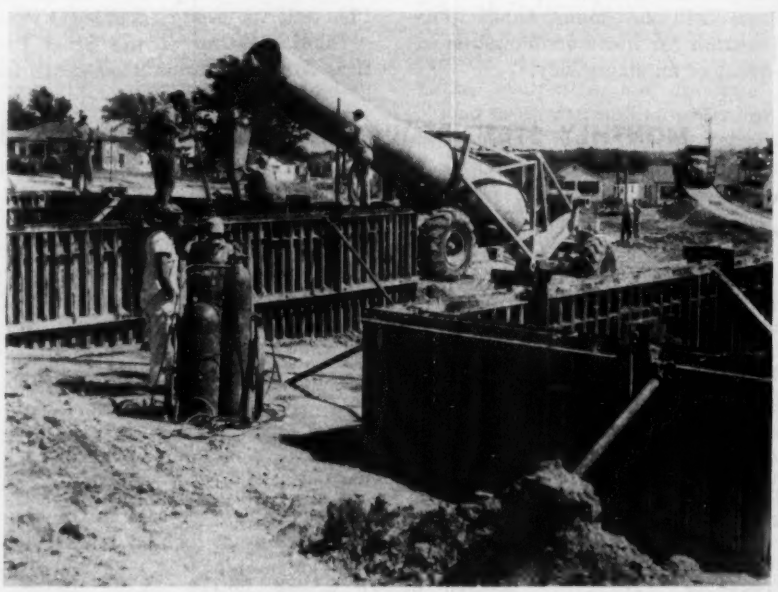
American Federation of Labor officials have indicated they are ready to press for a 30-hour week to spread employment as soon as the economy shows signs of slowing down. Dan Tracy, president of the AFL Brotherhood of Electrical Workers and head of the federation's shorter work-day committee, says:

"We don't know how long present employment will continue. But we must be prepared to move to a shorter work-week when the Marshall Plan and the rearmament program no longer are sufficient to carry us along."

Tracy said the drive for a shorter work-week now is only in the preparedness stage and admitted that the union has a "tremendous educational job" both among management and labor to sell them on the idea.

States Can Ban Closed Shop

CLOSED shop labor contracts can be prohibited by state laws, the U. S.



CEMENT GUN: Resembling an instrument of war, this cement gun is speeding construction work. Into its 34-ft barrel are charged sand, gravel, cement and water and out comes seven cu yds of concrete, more than triple the amount handled by truck mixers. It is self-propelled, mixes concrete while in transit and can discharge its load at a height of 20 feet. It is built by Le Tourneau Inc. NEA photo

Supreme Court ruled last week. Attorneys for organized labor believe the decision also upholds state bans on other types of "union security."

The high court upheld enactments by three states which prohibit discrimination against any worker because he is not a member of a union. The states directly involved are North Carolina, Nebraska and Arizona, although 13 other states have similar restrictions either by legislation or by constitutional amendment.

Counsel for the two large labor federations said they believe the court's ruling also upholds state bans of the union shop and maintenance of membership clauses.

The anti-closed shop section of the Taft-Hartley Act was not involved in the decision, although the court's opinion is expected to be widely quoted during forthcoming debates in Congress on the amendment or repeal of the federal law.

GE Boosts Some Motor Prices

GENERAL Electric Co. has announced price increases for some motors and turbine-generators. Prices of motors rated 50 horsepower and above have been advanced about 5 per cent. Large turbine-generators of 20,000 kw and higher went up 10 per cent.

GE has also reduced the amount which its contract prices on heavy electrical equipment can be increased to 10 per cent from the 20 per cent limit in effect during 1948.

Tool Builders Expand Membership

NATIONAL Machine Tool Builders' Association, Cleveland, has broadened its eligibility rules so that membership is now opened to producers of metal-forming machine tools. Heretofore, membership has been limited to makers of metal-cutting tools.

The association defines a metal-forming machine tool, as a power-driven device, not portable by hand, used to press, forge, emboss, hammer, blank or shear metal. Die casting machines, extruding machines, rolling mills or welding equipment are not included.

Begin Industrial Scrap Drive

CAMPAIGN to salvage steel scrap from industrial sources has been set in motion by the Business Paper Advisory Committee, Advertising Council Inc., upon the request of the Commerce Department. This program is in addition to the one being conducted by the steel industry to obtain all the salvage scrap possible from the general public.

Truman Steel Plan May Be Stalled

Sen. James E. Murray leading movement to boost ingot capacity to 110 million tons annually. Government financing proposed if private investment is not forthcoming

CONGRESS will take a long look—delaying definite action until perhaps 1950—at the only really new proposal in President Truman's State of the Union address, the suggestion that government participate in steel expansion.

This became clear last week as Rep. Arthur G. Klein (Dem., N. Y.) prepared to introduce legislation in the House and Senators James E. Murray (Dem., Mont.) and Joseph C. O'Mahoney (Dem., Wyo.) readied a measure for the Senate. The Klein bill would authorize a joint commission to make a report at the beginning of the second session of the 81st Congress in 1950. Any recommendations for positive action by the government would not take shape in Congress until after this report is filed.

Commission Members—The commission would consist of members of the House and Senate, officials from the executive branch of the government and advisory members from labor unions, industry and the general public. They would study "the feasibility of government purchase or construction and operation of a large steel plant for operation on a yard stick basis comparable to TVA power installations." The House proposal, which carries with it an appropriation request for $150,000, is expected to face a stiff fight, as is the entire government steel program.

While not overlooking the "social" implications of the President's proposal steel industry leaders point to the industry's own continued heavy expansion program and the time and money involved in carrying out any major government-financed schedule.

With heavy postwar accumulations of steel requirements now tapering off and steel operations in recent weeks surpassing even the wartime rate for a new all-time record, the critical point is past with a narrowing in the margin between supply and demand expected to continue. By the time a government sponsored program is finished and the new production is under way, the stringency will have long since been passed. Further, it is pointed out, it is not only a matter of building new facilities on relatively short notice but also a problem of developing new raw material supplies.

Leader of the government expansion adherents continues to be Senator Murray.

The Murray proposal, it will be recalled, is based largely on a study by Dr. Louis Bean of steel production and consumption starting with the year 1884. That was at the time the so-called "Full Employment" bill—later passed as the Employment Act of 1946—was under consideration. On the basis of all factors Dr. Bean concluded that the steel capacity should be 110 million tons to support full employment in 1950.

Main Plank—The contention that capacity of 110 million tons will be needed to support full employment in 1950 continues the main plank in the campaign for a steel expansion program sponsored and supported by the government. Of late, two other claims have been advanced. One is that we need more steel capacity if we are to be prepared to fight another major war—that an expansion in steel capacity might mean the difference between victory and defeat or stalemate. The other is that a program should be readied without delay so that it can be put into execution

STEEL CAPACITY UP

STEELMAKING capacity, at 96 millions tons per year, is now greater than ever before in history, and further large expansion is planned during the next two years, according to Walter S. Tower, president, American Iron & Steel Institute.

Ingot capacity was boosted by 1,800,000 tons during 1948, which is 18 per cent higher than the capacity of 1940. Population has increased only 11 per cent during the same period of time. Schedules now call for the addition of 2,200,000 tons in 1949 and 500,000 tons in 1950. Total capacity of more than 98 million tons by the end of 1950 is possible. To support the increase, other producing facilities in the industry are also being expanded and improved. Blast furnace capacity rose sharply in 1948 and as of Jan. 1, 1949, was rated at 70,500,000 tons per year.

when and if another serious depression looms.

Not Worried About Cost—As to cost, the proponents are not worried about that. When Senator Murray brought his scheme up-to-date last April he said the cost would more than justify itself.

Going into 1949, Senator Murray's ideas on financing the program remain unchanged. He prefers financing by the steel producers with private capital, but recognizes that existing high construction costs might furnish a valid objection. He would make public money available through loans, or he would authorize construction with government ownership, the plants to be operated by private contractors.

No Special Study—So far, administration agencies have made no special study of the Murray proposal, but they are ready to jump into it as soon as they get White House word that such a study is necessary in the public interest. The responsible unit is the President's Council of Economic Advisers.

Price Clarifying Bill Introduced

TERMING the inconsistent position of Federal Trade Commission members and officials in regard to permissible pricing methods as "nothing less than shocking and scandalous," Sen. Edwin C. Johnson (Dem., Colo.), new chairman of the Senate Trade Policies Subcommittee, last week introduced a bill "to codify and clarify the law and eliminate confusion with respect to transportation costs."

The measure outlaws all price fixing conspiracies but permits sellers acting individually in good faith and in absence of a conspiracy to absorb transportation cost when necessary to meet competition in distant markets, and it also permits individual sellers acting in absence of conspiracy to sell such products as breakfast foods and candy bars at the same prices to all buyers throughout the country. It specifically eliminates any possible interpretation that businessmen must sell at f.o.b. factory prices, and it eliminates any possibility that the word "price" means the seller's mill net return. It defines price as being what the buyer and seller agree to be the price.

Price Hearing Sought on Coast

ACTION by Congress to solve the basing point pricing problem has been requested by the San Francisco Chamber of Commerce, which is urging that San Francisco hearings be held by the Senate Committee on Interstate & Foreign Commerce. These hearings, the chamber said, are necessary in order that local industry can place its viewpoints before Congress.

George L. Parkhurst, chairman of the chamber's Chemical Industries Section, declared the federal laws should be amended to allow producers and distributors to meet competition by systematic absorption of freight costs and at the same time to provide for outlawing of monopolistic practices and conspiracy.

October Steel Exports Up

Gain of 35,000 tons over September reverses trend in effect since beginning of 1948

OCTOBER exports of iron and steel were 35,000 tons over the September figure and reversed the trend in effect since the beginning of 1948, according to the Department of Commerce. Despite the increase over the previous month, October's ferrous exports at 326,918 tons were more than 245,000 tons below the total for the corresponding month of 1947.

Total iron and steel exports for the first 10 months of 1948 amount to 3,704,764 tons compared with 5,474,313 tons for the corresponding period in 1947. Leading the list in tonnage exported during the first 10 months of 1948 is tin plate and tagger's tin which aggregates 506,940 tons and represents an increase of 34,627 tons over the corresponding period in 1947.

Ship More Bars—Larger overseas shipments of bars were responsible for a large part of the increase in October exports over the September total. Increases were noted in all categories except alloy steel bars. On the other hand, exports of ingots, blooms, billets, slabs and sheet bars declined to 9113 tons in October from the 16,499 tons the preceding month.

Sees ECA Taking More Steel

FULL impact of iron and steel procurement authorizations for the Economic Cooperation Administration on small business in this country is yet to come, according to the House Committee on Small Business, which reports approximately 12 per cent of the economic aid to Europe consists of iron and steel mill products and

U.S. EXPORTS OF IRON AND STEEL

(Net Tons)

	October	September	Ten Months Total—1948
Semifinished and Finished Products:			
Ingots, blooms, billets, slabs, sheet bars	9,113	16,499	195,607
Wire rods	2,964	2,398	34,282
Skelp	4,970	4,160	48,060
Iron bars	150	42	3,297
Concrete reinforcement bars	11,305	6,645	112,520
Steel bars, cold finished	3,953	3,288	39,722
Other steel bars (excluding alloy)	26,926	15,482	259,818
Alloy steel bars	1,641	3,855	48,647
Welding rods, electric	1,353	925	13,274
Boiler plate	693	1,565	26,052
Other plates, not fab.	20,186	23,690	277,738
Plates, fab., punched or shaped	1,306	1,355	20,646
Iron sheets, black	2,321	1,254	15,320
Steel sheets, black	32,076	27,843	341,090
Galvanized sheets	6,595	5,119	52,178
Strip steel, cold rolled	6,183	4,444	48,579
Strip steel, hot rolled	5,020	5,153	57,887
Tin plate and tagger's tin	52,323	41,974	506,940
Terne plate (incl. long ternes)	807	424	7,589
Structural shapes, plain	25,884	19,321	252,213
Structural shapes, fab.	10,884	9,383	139,751
Frame and sashes	294	318	2,571
Sheet piling	1,645	2,893	31,128
Rails, 60 lbs. per yard and over	12,962	18,911	214,248
Rails, less than 60 lbs. per yard	852	1,057	8,519
Rails, relaying	1,630	1,485	28,867
Splice bars and tie plates	2,619	2,093	42,566
Frogs and switches	226	708	5,027
Railroad spikes	706	649	8,159
Railroad bolts, nuts, and washers	560	325	7,061
Car wheels, tires and axles	2,559	4,051	33,817
Seamless black pipe	2,354	1,188	17,761
Seamless casing and oil line pipe	20,841	14,530	190,958
Seamless boiler tubes	2,337	2,882	31,565
Welded black pipe	4,802	4,348	51,029
Welded galvanized pipe	3,699	2,467	33,760
Welded casing and oil line pipe	7,240	9,015	138,552
Welded boiler tubes	216	137	1,538
Other pipe and fittings	5,092	5,208	57,408
Plain wire	6,656	4,958	61,092
Galvanized wire	5,350	3,803	42,630
Barbed wire	3,724	3,000	33,419
Woven wire fencing	1,191	716	8,992
Woven wire screen cloth	574	472	4,820
Wire rope and strand	1,333	1,081	11,300
Wire nails	1,628	1,478	16,433
Other wire and manufactures	2,653	3,157	36,464
Horseshoe nails	25	5	398
Tacks	255	222	3,069
Other nails, incl. staples	698	553	9,073
Bolts, nuts, rivets and washers, except railroad	3,426	3,154	47,787
Forgings	2,060	2,054	23,012
Horseshoes	58	27	531
TOTAL	326,918	291,764	3,704,764

Source: United States Department of Commerce.

machinery and equipment.

To date, the committee states, $70 million of iron and steel products have been provided the ECA and some $50 million worth additional is scheduled to be diverted from the domestic economy. As a result, the committee envisions continued supply difficulties for small business in this country. At the same time it expects European steel will find its way into this country in larger volume, flowing into domestic consumption through the gray market.

The committee recommended that efforts be made to increase output of steel in Western Germany.

Freight Rates Rise 5 Per Cent

INTERSTATE Commerce Commission has authorized interim increases in freight rates averaging 5 per cent and providing about $415 million additional revenues for the railroads per year. The railroads had asked for a temporary increase of 8 per cent pending the commission's action on their request for a permanent 13 per cent increase to offset rising labor and material costs. The increases will be effective on five days' notice to the public or five days after tariffs have been filed with the ICC.

The following increases are to be superimposed upon the existing rates: 6 per cent within eastern territory, 6 per cent within southern territory, 5 per cent within zone 1 (Iowa, Wisconsin and part of Minnesota) of western trunk line territory, 4 per cent within western territory other than zone 1 of western trunk line territory, 6 per cent interterritorially, between eastern and southern territories; 5 per cent interterritorially, other than between eastern and southern territories.

Ore Handling—Charges for handling iron ore at lower lake ports may be increased 6 per cent. No increase is proposed in charges for storing iron ore at lower lake ports, and such charges are exempted from the commission's findings. No increase is proposed in charges for handling iron ore at upper lake ports on shipments forwarded therefrom by water, and such charges are also exempted. Line-haul rates on iron ore to upper lake ports for transshipment by water and from the Minnesota ranges to Duluth, are not proposed to be increased, and such rates are exempted.

The increased rates authorized shall be applied as a percentage increase in the amount of the total freight charges as shown by the freight bill, exclusive of the 3 per cent federal transportation tax, except as otherwise provided in the authorization.

In a supplementary action, the commission authorized the Railway Express Agency to put into effect as of Dec. 30 its so-called western scale of rates, which is about 10 cents a hundred pounds higher than the former eastern-southern scale.

Adopts New Coating Extras

Republic Steel using new method in applying coating extras on galvanized sheets, roofing

NEW METHOD of quoting coating extras on galvanized flat sheets and formed roofing was adopted last week by Republic Steel Corp., Cleveland.

Brought about by the high price of zinc, the new method, effective Jan. 3, provides a coating extra for each gage of galvanized flat sheets rather than lumping the gages into four groups. Furthermore, these revised extras were made applicable to formed roofing, on which coating extras already were being quoted for each gage sold. However, the various forms of roofing have been divided into two groups with different extras for each of the two groups.

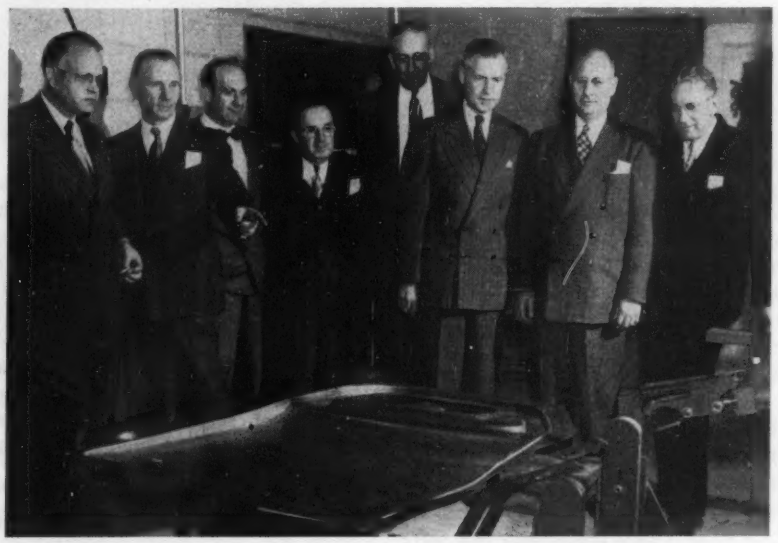
Recognizes Variation—The new method recognizes the variation in the amount of zinc required in coating the various gages. No particular attention was paid to this variation as long as zinc was low in price, but as the price rose it became increasingly evident too much was being charged for coating on some of the heavier gages and not enough on some of the lighter ones.

Heretofore, gages were lumped together in four groups for application of coating extras. They were 9 to 14 gage, inclusive; 15 to 23 gage, inclusive; 24 to 27 gage, inclusive; and 28 to 32 gage, inclusive.

Under the new method each gage, 8 to 32, both inclusive, is treated separately. This, said Republic, will result in an advance on some gages, particularly the lighter ones, and a reduction in the heavier ones.

Formed Roofing—The new extras on formed roofing are in two groups. One set applies to 1¼, 2, 2½, and 3-in. corrugated 26-in. wide base and plain pressed brick siding, rock face brick siding, and stone siding. Gages covered in this set of extras are 18, 20, 22, 24, 26, 28 and 29. The other set applies to the following roofing which has a larger surface area: 2-V, 3-V, 5-V crimp, triple drain and channel drain types, double cross lock roll and pressed standing seam roofings, 2½ and 3-in. corrugation, 27½-in. and wider. Gages covered by this set are 24, 26, 28, and 29.

The new coating extra lists for both galvanized flat sheets and galvanized formed roofing are calculated to cover each one-cent fluctuation in the price of prime western zinc between 5c and 25c a lb f.o.b. East St. Louis.



IRON HAND: First public showing of the "iron hand," a device to remove sheet metal stampings from a press, is conducted in Detroit by Harry Sahlin, Sahlin Engineering Co., Birmingham, Mich. Watching the demonstration are, left to right: John Meyn, master mechanic for DeSoto; Mr. Sahlin; A. Walton, manager, Budd Mfg. Co.; W. F. B. Henderson, executive vice president, E. W. Bliss Co.; H. H. Ahara, Fisher Body; M. M. Smith, president, E. W. Bliss Co.; F. McGary, vice president, Murray Corp.; P. Danly, Danly Machine Specialties Inc.

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

New Congress warned to reform procedures and machinery in compliance with 1946 reorganization act, abolish seniority, filibusters and curb rules committee absolutism

MEMBERS of the 81st Congress have been advised sharply to reform its procedure and machinery in compliance with the legislative Reorganization Act of 1946 and to take further steps to abolish seniority, senate filibusters and House Rules Committee absolutism.

The warning was issued by the National Committee for Strengthening Congress, whose chairman, Robert Heller, Cleveland industrial engineer, wrote the congressional reorganization plan which so greatly influenced the 1946 Reorganization Act. The committee membership includes about 40 outstanding executives of industry, farm and labor organizations.

In a letter to each congressman, the committee specifically asked the Congress to: Refuse to abandon the legislative budget, as the new chairman of the House Appropriations Committee has threatened, and develop a congressional budget by Feb. 15, as the law requires, or extend this deadline by 30 or 60 days and live up to it.

Refuse to let professional committee staff appointments become the football of party patronage.

Eliminate senate filibusters by adopting a majority vote for cloture.

Eliminate the veto power of the House Rules Committee over the work and proposals of all other House committees by (a) requiring the Rules Committee to report any legislation for "consideration" or "no consideration," (b) requiring a two-thirds vote of the House to grant the Rules Committee a closed rule or a waiving of regular House parliamentary rules.

Create two real "policy committees" in both House and Senate, one for each political party, of chairmen of or ranking minority members of each standing committee, to be responsible for each party's legislative program and performance.

Give each party leadership the authority to choose standing committee chairmen instead of following the blind seniority tradition.

Ask Aid in Atomic Research

ATOMIC Energy Commission's Industrial Advisory Group proposes—and the commission has accepted in principle—greatly expanded participation by industry in the industrial development of atomic energy. The commission, the advisory group recommended, should utilize its contract system to stimulate development work by some of the branches of industry that have a direct potential concern with atomic energy. "Among these are the chemical, petroleum, power, heat transfer equipment, metallurgical, and instrument industries," said the group in a 23-page report.

If industry once becomes engaged in atomic energy development or research, it went on, "it may discover for itself many lines of economically rewarding activities in this new field." The commission, the report said, is faced with a multitude of new technical problems which need to be solved promptly and in the interest of national security. Unfortunately, the number of industries now engaged in contracts with the AEC, it said, is too limited.

The group also recommended that the commission make available all information of use to industry, that it publish a vast amount of non-secret information that has not yet been publicized, and that it remove secrecy wraps from additional information if that is found possible. It also was recommended that the commission set up a permanent general industrial advisory committee with as many as 20 members.

The group, which now has finished its labors, comprised the following: Chairman, James W. Parker, president and general manager, Detroit Edison Co.; Isaac Harter Sr., chairman, Babcock & Wilcox Tube Co., Beaver Falls, Pa.; Gabriel O. Wessenhauer, power manager, Tennessee Valley Authority, Chattanooga, Tenn.; Robert E. Wilson, chairman, Standard Oil Co. of Indiana, Chicago.

U.S. Advises on Foreign Licenses

SOME United States manufacturers unable to accept export orders on the scale offered—either because they have been denied export licenses or because their domestic business prevented—are making deals to have their products manufactured abroad on a royalty basis. They plan to supply foreign manufacturers with blueprints and technical assistance and thus increase their income without incurring much expense.

Mindful of the fact that right after the war our manufacturers were urged to do business with the Russians only to become targets of congressional criticism during 1948 because they had accepted Russian orders in good faith, a number of the manufacturers thinking about granting foreign manufacturing rights have written to the government for advice.

At least 50 such inquiries have been referred to the Office of International Trade, Commerce Department, new ones come in almost every day. Present policy is to call in representatives of the interested agencies—State Department, National Military Establishment and others—and agree upon an answer. Then the answer is sent as an informal letter of advice from one of the men who pass on export licenses; this is because the same factors that influence granting or rejection of export licenses also are present in connection with these proposals to place manufacturing rights abroad. The difference, of course, is that the government has the power to prevent export of goods, whereas it has no power to prevent exportation of technical know-how and of manufacturing rights.

The policy in answering these requests is to advise the manufacturer whether, in the opinion of the government, the placing of a contract awarding manufacturing rights to a foreign manufacturer would be harmonious with or counter to the international objectives of the United States. In some cases the proposed deal is given the government's blessing. In others the manufacturer is asked to drop the negotiations. In others it is suggested that he include in his contract a clause preventing shipment of the goods produced in a foreign country to any of the Iron Curtain countries. Each inquiry is handled separately.

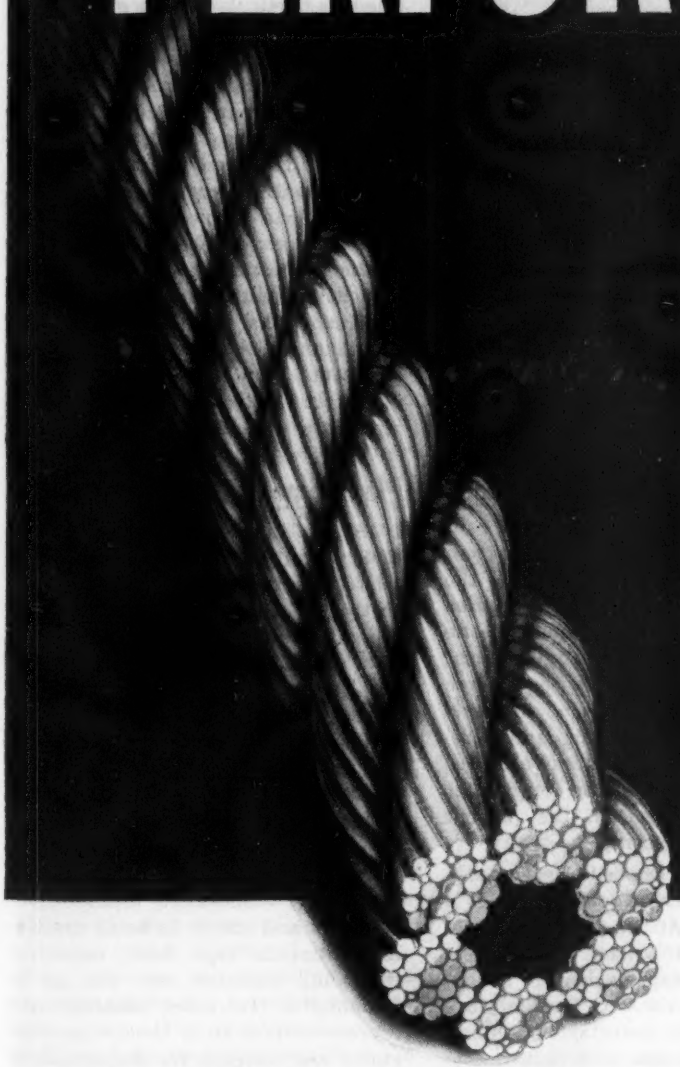
Government officials point out that while they have no authority to prevent such deals, their informal opinion at this time may save the American manufacturer a lot of embarrassment at some future time.

Industrial Production Dips

INDUSTRIAL production in November declined slightly below the postwar peak rate of the previous month.

JOIN THE TREND TO TOP

PERFORMANCE



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ROEBLING

☆ A CENTURY OF CONFIDENCE ☆

TALKING OVER SALARY INCREASES: Higher pay for cabinet members and heads of federal agencies is the subject of this discussion between James E. Webb, right, director of the budget, and Lindsay Warren, comptroller general. The President has asked the Senate Civil Service Committee to give top officials about $1.5 million in pay boosts. NEA photo

according to the Federal Reserve Board, Washington. Output of the nation's factories and mines was 94 per cent above the 1935-39 average, according to the board's seasonally adjusted index. October was 95 per cent above prewar.

Commenting on developments in November and the first-half of December, the board said that automobile assemblies recovered from a 4 per cent drop in November to reach a postwar peak early in December; wholesale prices and consumers' prices declined about 1 per cent from mid-October to mid-November, due chiefly to decreases in foods.

Following declines early in November in department store sales, "sales recovered to year-ago levels during the first half of December and it is estimated that total dollar sales for the holiday shopping period will be near 1947's record volume. Sales of appliances and various other durable goods, except new automobiles, have been below the exceptionally high levels prevailing at the end of 1947."

Mineral Developments Noted

PROGRESS in mineral utilization and development is indicated by field reports to the Bureau of Mines headquarters in Washington.

Signifying the strides in concentrating taconite, the Minneapolis Experiment Station has sent in a casting produced by the University of Minnesota from iron derived from taconite. It is a replica of the first casting made in America —the famous 3-legged 1-quart kettle placed in production at Saugus, Mass.,

Reports from Alabama show three important blast furnace interests there now are conducting active research on iron ore concentration so as to increase the iron burden to something higher than the present average of 35 per cent.

New Copper Deposit Developed—In copper, the chief development is a project to exploit the San Manuel deposit in central Arizona, the largest new domestic copper deposit uncovered during World War II. The Magma Copper Co. has started sinking shafts and erection of a mill.

New zinc and lead reserves are seen as the result of Bureau of Mines work on the oxidized ores of southern Nevada and nearby California. Using a caustic soda leaching treatment, soluble sodium plumbate and sodium zincate are obtained as material for further processing. The ore contains 20 per cent metallic zinc and about 5 per cent lead, and already a fairly high rate of zinc extraction is being maintained.

To keep abreast of increasing demands for titanium, mainly for research purposes, the bureau is increasing production of this metal at Boulder City, Nev., from 125 to 400 pounds a week. This is in addition to the 700 pounds weekly now being produced at the Du Pont plant near Wilmington, Del. Also, the bureau is increasing the capacity of its College Park, Md., Experiment Station, to convert titanium powder into fabricated metal forms.

Upgrade Manganese Stocks—During the war when strategic and critical minerals were acutely scarce, a large amount of sub-grade material was put in government stockpiles and this was particularly true of domestic manganese ore. In taking over the stockpiles accumulated and maintained by the Reconstruction Finance Corp., the Bureau of Federal Supply, under direction of the Munitions Board, will upgrade all these stockpiles in accordance with commercial specifications. Two contracts for such upgrading already have been let, one to the Domestic Manganese & Development Co., and the other to the Taylor-Knapp Co., to bring two Montana manganese stockpiles up to 48 per cent. Similar contracts will be placed in connection with all other stockpiles requiring such treatment.

Plan "Small Business" Day

BUSINESS problems and restrictions and recommendations for their legislative remedies will be presented directly to members of Congress on "Small Business Day" in Washington, Feb. 16. More than 500 members of the National Small Business Men's Association will attend the meeting.

A specific declaration of legislative recommendations, devoted mainly to the matters of taxation, labor and governmental controls and regulations which affect the association's membership of more than 30,000 manufacturers, wholesalers, retailers, distributors and others, is being drafted. Appointments have been made for the small business men who go to Washington to meet senators and representatives from their respective states and districts for discussions of the recommendations in the latters' offices.

After keeping their appointments with senators and representatives, the small businessmen will sit down in a closed panel session with chairmen of several important congressional committees. The president of the Senate and the speaker of the House have been invited to speak at the dinner which will conclude the meeting. More than 200 legislators who are expected to attend the dinner will be seated with their businessmen constituents.

Industrialists Abroad Breathe Uneasily

Rarefied inflation atmosphere being felt increasingly in Germany, Belgium, France, Norway, India and Japan. Currency complications add to the problems

TRENDS and events abroad indicate that industrialists overseas may be getting increasingly uncomfortable in the rarified atmosphere produced by inflationary and financial pressures.

In Western Germany banks are participating in a planned deflationary program which is already having industrial repercussions. Currency difficulties are curtailing Belgium's vital export trade and are bringing about a slowly increasing unemployment. French industrial prices rose 7.5 per cent in October, and heavy increases occurred again at the beginning of November. Although the Norwegian cost of living dropped from 157.2 to 157.1 (1938=100) during November, the index remains perilously close to 160.8, the figure agreed upon by government, labor and management as the point when wage increases may be applied for. The Japanese must tighten their belts as the result of an inflation which has sent prices skyrocketing 60 per cent in the past year. India is finding that the cost of importing industrial equipment is becoming prohibitive, a factor partly motivating the nation's industrialization program.

Western Germany

CREDIT is tightening in Western Germany as a result of a loan curtailment program which banks began in November. No bank now is permitted to have more credits outstanding than as of last October, and small business loans are practically unobtainable except in the capital goods industries. This is the first phase of a deliberate deflation which is viewed as necessary to curb the spending spree touched off by the currency reforms last summer. The most immediate effect on Ruhr industry has been to slow customer payments.

The restrictions have had no effect on production, however, which continues fairly stable, although power shortages are bringing about increasing disruptions. Many plants now work at night when more electricity is available. Total employment in the steel and metal making industries rose from 172,742 in June to 190,058 in September, while in metal processing an increase of 7 per cent to 211,517 has been registered. Order backlogs still are rather high in the Ruhr steel industry. Most plants have enough business to keep busy until next April.

The reorganization of German coal and steel is progressing slowly. No custodians for either industry have yet been appointed. It has been announced, however, that 25 coal mining firms will be established. When the final reorganization has occurred, daily coal output may be raised from 320,000 tons to 350,000. Coke output by next spring should be boosted from the present 60,000 tons daily to 75,000.

Dismantlings, especially of plants earmarked for France, continue. This is interpreted by some as part of the price for French support of the American-British plan to reorganize German industry. In recent weeks there also have been signs that French steel groups are warming up to the idea of closer co-operation with the Ruhr industry by forming associations between steel plants of Lorraine and Bizonia. DeGaulle factions are said to be interested in this program.

Belgium

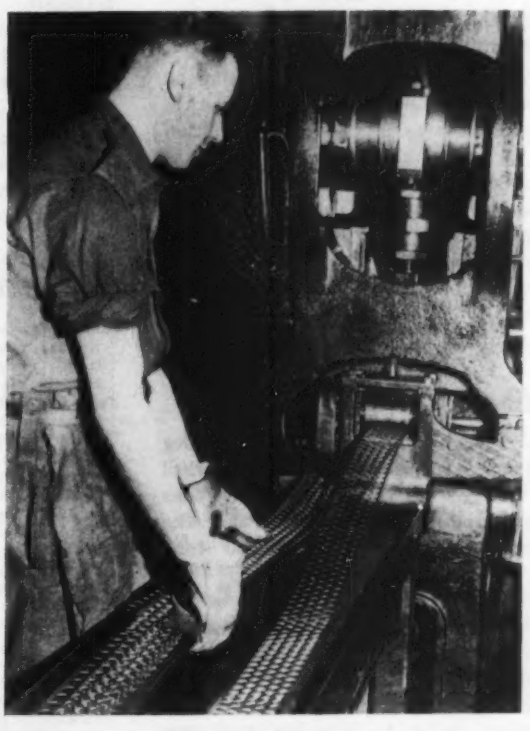
ALTHOUGH production and employment in Belgium's metalworking industry remain high, executives in this field are analyzing somewhat anxiously the declining home appliance demand and the slowly mounting unemployment in the textile, diamond, paper and glass industries. There is also a slackening in the machine tool industry caused by lower export demand which in turn is occasioned by currency difficulties.

Despite the less optimistic outlook, expansion programs in the steel industry are humming. Societe des Acieries et Minieres has put in operation a new 15-ton electric furnace for alloy steel production. The John Cockerill works is now building a battery of 56 coke ovens.

Freight car builders are currently the most active. All the Belgian makers have divided up an order for 6300 cars destined for Bizonal Germany. The Netherlands is another heavy buyer. In steel, Belgium still has to supply 13,000 metric tons to Russia on the commercial agreement now in force. Negotiations are taking place with Pakistan for furnishing 120,000 tons of steel products. Negotiations are also in progress with Finland. Belgian agreements with Switzerland call for $6,820,000 worth of steel to be shipped to that nation.

France

FRENCH economists calculate that French workers now are getting 25 per cent less in real wages per hour of work than in 1938, but that their



MAKING MONEY: Although there is more than $500 million in change in circulation in Britain, a shortage exists, probably due to hoarding of coins. The British mint is working around the clock to turn out more coins to enable employers to fill their pay envelopes. Here a perforated strip of metal leaves the press after coins have been punched out. NEA photo

production is also 20 per cent less per hour than ten years ago.

These figures do not agree with the government's, which, however, are bitterly criticized by both business and labor. Many business men are watching with interest the activity of the U.S.-U.K. Productivity Council established in connection with ERP. Much comment is heard that a similar group would be beneficial in France.

Norway

PLANS for the pig iron plant of the new electric steel works on the Arctic Circle at Mo i Rana in Norway are now almost completed and foundation construction should begin this spring. At the same time, construction of facilities for raw material storage will get under way.

Purchase of machines and equipment abroad—principally rolling mills—for the entire plant will begin soon. Orders for some equipment have already been placed with Norwegian producers. Major work at the plant site thus far has included construction of a railway, installation of docks and warehouse, preparation of the building site and construction of about 70 homes for management and personnel.

Japan

DESPITE the rising cost of living in Japan, some aspects of the Japanese economic situation are excellent, according to Gen. Douglas MacArthur. November industrial production was 62 per cent of the 1930-34 average and 47 per cent above a year ago. Exports in 1948 amounted to about $260 million, 48 per cent above 1947.

Nevertheless, to achieve a balanced economy in Japan, General MacArthur advocates increasing production of all essential indigenous raw materials and manufactured products, a balanced budget, better tax collection program, wage stability, strengthened price controls, delegation of foreign trade and exchange controls to Japanese agencies, and maximizing exports.

India

LAST year India produced only about 825,000 tons of steel, a poor record in view of the fact that 868,580 tons were produced in 1947 and that the existing capacity is 1,260,000 tons per year.

India needs 2.5 million tons per year, and to make up the difference she has always imported considerable tonnages. Tight world steel supplies and high import costs, however, are forcing India to rely on her own resources. In 1948 she imported only 40,000 tons from the U. S., compared with 475,000 tons originally planned for the year.

The new nation hopes to relieve its chronic steel shortage with construction of plants to turn out 1 million tons more per year. These units, design work on which is being done by Arthur McKee & Co., Koppers Co. and the British International Construction Co., will be completed within five years and will be built so that their capacities can be doubled.

Sees Signs of Europe's Revival

CONDITIONS in Italy, Switzerland, Sweden and England seem to be improving materially, in the opinion of E. D. Frank, vice president, National Automatic Tool Co. Inc., Richmond, Ind., who recently returned from a European business trip.

France, Belgium and Holland seem to be picking up steam with this condition also holding true for Denmark and Norway. These nations, however, are expecting to modernize their plants with new machine tools through purchases made with Marshall Plan money, Mr. Frank said.

Plants in Austria are surprisingly active but Czechoslovakia lags behind the other European nations visited by Mr. Frank. Germany is slowly rebuilding her industries but it will be some time before she will be an active factor in European economy.

The European nations are trying to export as much as possible so as to improve their financial situation but, in most plants observed by Mr. Frank, modern machine tools are necessary to bring down costs.

During his trip he found a keen interest among European concerns in modern machine tools and methods but a shortage of money to pay for these machines has been a handicap and sufficient allocations have not been made to date under ERP to make these purchases possible.

Business Urged To Act, Not Gripe

GREATER participation by top business management in governmental affairs was urged by T. M. Girdler, chairman of the board, Republic Steel Corp., in a recent address before the Academy of Management at Case Institute of Technology, Cleveland.

Declaring that business men have been complaining long about government but doing very little to remedy complaints, Mr. Girdler urged that management devote more time and money to civic welfare activities. Foremost problem involving both business and government today, he said, is determining how profits earned by a company should be used.

Barkley To Speak to Scrap Men

ALBEN W. BARKLEY, vice president-elect of the United States, will be one of the speakers at the Institute of Scrap Iron & Steel's annual meeting, Jan. 16-18, at the Netherland Plaza Hotel in Cincinnati.

Other speakers include Alex Miller, scrap consultant to the Department of Commerce, who will discuss the objectives and mechanics of the department's scrap drive; Whiting Williams, consultant on labor problems in Cleveland, who will discuss labor-management relations; and Leo F. Reinartz, Armco Steel Corp., who will report on what the steel industry expects from the scrap industry in 1949.

The institute's safety program will be outlined, and the meeting will feature a forum on safety and mechanization. William G. Marks, Bureau of Labor Standards, will speak on how safety lowers costs and increases production. E. J. Afram, Milwaukee, will explore possibilities in further mechanization of scrap yards.

Calendar of Meetings . . .

Jan. 10-14, Society of Automotive Engineers: Annual meeting, Hotel Book-Cadillac, Detroit. Society headquarters are at 29 W. 39th St., New York.

Jan. 10-14, Material Handling Institute and American Society of Mechanical Engineers: Materials handling show, in Philadelphia. ASME's management and materials handling divisions will conduct a five-day materials handling meeting concurrently with the show.

Jan. 16-20, Associated Equipment Distributors: 30th annual meeting, Hotel Stevens, Chicago. Group's executive office is at 360 N. Michigan Ave., Chicago.

Jan. 17-18, Institute of Scrap Iron & Steel: Convention, Netherland-Plaza Hotel, Cincinnati. Institute executive vice president is Edwin C. Barringer, Dupont Circle Bldg., Washington.

Jan. 20-21, American Management Association: Annual meeting of the association's finance division, at Hotel Statler, New York, formerly the Hotel Pennsylvania.

Jan. 20-22, Society for the Advancement of Management: Conference on industrial mobilization, Chicago. Society headquarters are at 82 W. Washington Blvd., Chicago.

Jan. 24-28, American Society of Heating & Ventilating Engineers: Ninth international heating, ventilating and air conditioning show, International Amphitheatre, Chicago.

Jan. 27, Stoker Manufacturers Association: General meeting, LaSalle Hotel, Chicago. Association headquarters are at 307 N. Michigan Ave., Chicago.

Feb. 13-17, American Institute of Mining & Metallurgical Engineers: General meeting, San Francisco.

Feb. 21-22, Purdue University and Material Handling Institute: Materials handling conference on Purdue campus, Lafayette, Ind.

Feb. 28-Mar. 4, American Society for Testing Materials: Spring meeting and committee week, Hotel Edgewater Beach, Chicago. Society headquarters are at 1916 Race St., Philadelphia.

Coach Builders Seek Business

Domestic demand for public transport vehicles lags due to inadequate earnings of transit systems. Manufacturers of busses cultivating export trade

WEARY standees on crowded public transportation vehicles may find it difficult to believe, but builders of transit equipment are looking increasingly to foreign countries for business.

Now that many of them have greater productive capacity than ever before, builders of trolley coaches, street cars and motor busses are finding domestic demand shrinking. Need for a considerable amount of both replacement and additional equipment on street and highway transit systems still exists in the United States, but increased operating costs have held down net earnings of the carriers and removed much of the incentive for ordering new vehicles.

Following a five-year decline, operating income of U. S. transit systems in 1947 had sunk to an inadequate 3.39 cents per dollar, far below the depression years when it was 11.86c in 1932 and 14.42c in 1933, according to the American Transit Association, New York. In 1942 the average was 13.65c. Reports from various transit companies during 1948 indicated no substantial improvement, if any, would occur.

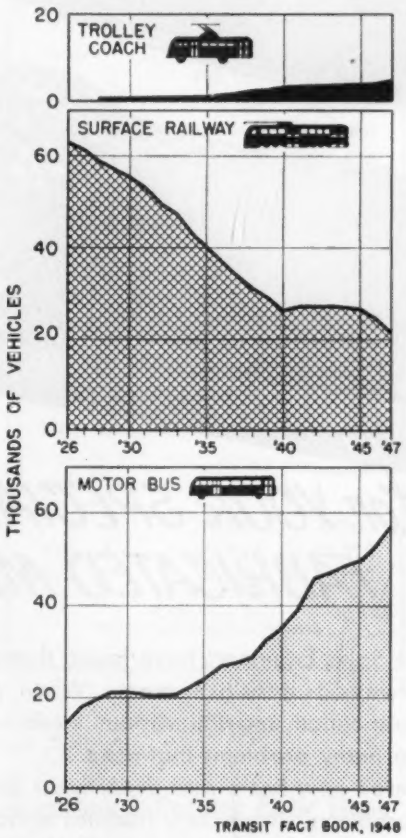
More Trolley Coaches — Production of trolley coaches in 1948 in the U. S. has been estimated at 1300 units, exceeding the previous alltime record of 1026 in 1947. On Jan. 1, 1949, unfilled orders represented around 800 trolley coaches, but the rate of ordering has been falling.

Meanwhile, demand for motor busses steadily decreased in 1948. Reflecting this trend, the motor coach industry which had been producing from 14,000 to 16,000 integral busses per year, about double the prewar production rate, was expected to find its aggregate down to about 12,000 vehicles. One big producer predicted the annual rate will slip further to 8000 or 10,000 units. Looking at this future, another bus builder says, "The trouble with our business is that we have the capacity to build at least 25,000 busses a year, yet the normal replacement demand is only about 7500 yearly."

Exports Active — With domestic demand tapering off, the export business which has been reported active becomes increasingly important to the transit equipment makers. Most important among the export markets is Latin America. For instance, in 1947 U. S. exports of busses totaled 4238 units, and of this number, approximately 2200 went to the Latin-American region. Demand for both motor coaches and trolley coaches for Latin-American countries continues good, the principal limit to placement of orders being volume of dollar exchange available. However, one motor coach manufacturer now working one shift reports that if its export business continues to grow at the present rate it will have to expand to two or more shifts.

Recognizing that the downturn in domestic demand stems largely from economic factors, producers of transit vehicles are striving to make equipment more economical to use.

Development Work—Motor coach makers also are doing considerable development work on springing, particularly the torsion rod and torsilastic suspensions, automatic transmissions, and engines utilizing gasoline injection. Trolley coach builders have brought out new models embodying considerable improvements in appearance, riding comfort, heating, lighting, and overall passenger appeal. In addition, a considerable number of detail refinements have been made by electrical equipment manufacturers and axle suppliers.



Number of motor busses owned by transit companies has grown at approximately the rate that street cars have declined. Street cars numbered 62,857 *in* 1926, *motor busses,* 14,400. *In* 1947 *there were* 21,607 *street cars,* 56,917 *busses. Trolley coaches came into the picture in* 1928 *and by* 1947 *totaled* 4632

Conversion from street railways to motor bus and trolley coach lines has pushed the number of each in use to alltime highs, with motor busses constituting more than half of all the transit equipment. Of the 92,330 units owned by the U. S. transit industry in 1947, motor busses accounted for 56,917, according to the American Transit Association. The remainder consisted of 4632 trolley coaches, 21,607 surface cars and 9171 subway and elevated cars. In 1926, surface cars totaled 62,857 units out of a grand total of 86,166 transportation vehicles. Since then, the surface trolley car has constantly declined in number as streets and highways were developed and improved, favoring the adoption of rubber-tire vehicles.

Bridge Construction Booms

TOTAL of 2068 new steel bridges—largest number of new steel bridge jobs in a decade—were under construction at the yearend in the United States, N. R. Patterson, president of the American Institute of Steel Construction, has disclosed in a review of 1948 activity. The new structures include 164 railroad and 1904 highway bridges.

New England and Middle Atlantic states account for 226 bridges; Southern, 433; Central, 989; Southwestern, 234; and Mountain and Pacific, 186. Structural steel for bridges and buildings reached a total of 1,930,000 tons in 1948. Mr. Patterson predicted, however, that about 10 per cent less steel than this would be available to the trade in 1949.

The fabricated structural steel industry has the facilities to fabricate and erect well over 2 million tons of steel in 1949, and there is no lack of demand, the institute president declared. Current backlog of contracts for the next six months exceeds 1 million tons. Some slackening has been noted in demand for steel for new industrial structures, but stores, office buildings, public buildings and bridges more than take up this slack.

for YOUR SPECIAL FABRICATED METAL NEEDS!

Levinson Sales Engineers have found that placing fabricated metal contracts is not always as easy as it seems. When you consider the endless types of metal fabrication and the various kinds of metals, you can readily appreciate the many problems that arise.

Levinson now has *a new department designed to handle such metal fabrication problems.* These new facilities enable us to study your requirements with you, help determine the most economical method to use, and, in many cases, see to it that your job is done with a minimum of difficulty and at the lowest possible cost, regardless of the metals or processes used.

We extend to you a cordial invitation to take advantage of this special Levinson service.

LEVINSON STEEL

The LEVINSON STEEL COMPANY

32 PRIDE ST., PITTSBURGH, PA.

LS-1

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

New year starts with rush of activity in Motordom, with unveiling of new models by Chevrolet, all Chrysler lines, Studebaker and Kasier-Frazer, plus SAE meeting

DETROIT

MOVING in with a rush of activity, the automotive New Year saw Chevrolet unveiling its 1949 models last Thursday for the Detroit press contingent and some of its local zone sales personnel, and on the following day Studebaker pulled the curtain in Chicago on its new stuff. This week thousands of engineers swarmed into the motor capital for the annual convention of the Society of Automotive Engineers which will hold forth for five days. Monday night Harry W. McQuaid, renowned steel mill metallurgist, is scheduled to address several hundred of the local metallurgical fraternity on the "Economics of Metallurgy in the Automotive Industry." Wednesday night Paul Hoffman, ECA Administrator, will be featured speaker at the SAE banquet, discoursing on "Recovery—The Road to Peace." Friday brings a press and radio preview of the entire Chrysler Corp. passenger car line, including Chrysler, Dodge, DeSoto and Plymouth, at the Highland Park plant of the corporation—an "on-the-record" showing, incidentally, except for photographs. And to round out the parade, Kaiser-Frazer this week will run off a midwinter carnival at its Willow Run plant for 4500 dealers and distributors, centering around the showing of four new models.

Chevrolet Show Jan. 22

CHEVROLET will release no details of new models until Jan. 22, by which time the New York General Motors show will be in full swing. The show properties will include some 30 vanloads of stage settings and exhibits, some weighing as much as 3 tons, and they have to be set up at the Waldorf-Astoria in less than three days, necessitating round-the-clock work schedules for a crew of 200 stagehands. About 30 of the 1949 models of all GM passenger car divisions will be on display, some of them the most garishly ornate showpieces ever to be devised.

Chevrolet already is running "teaser" adds on its forthcoming models—"massive as a diesel locomotive, sleek as a jet plane," etc.—and hints have been dropped of a major improvement in the front suspension system. Bodies, of course, are the General Motors "A" series, practically identical with the Pontiac line, except that the latter has been lengthened slightly over the Chevrolet version without requiring any appreciable extra tooling.

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

	1948	1947
January	422,236	366,207
February	399,471	393,636
March	519,154	443,588
April	462,323	445,138
May	359,996	404,190
June	454,401	421,466
July	489,736	400,944
August	478,146	364,958
September	437,181	444,500
October	516,843	461,536
November	495,918*	417,492
December	500,000*	492,819
12 mos.	5,535,405*	5,056,474

* Preliminary.

Estimate for week ended:

	1948	1947 (same week)
Dec. 18	123,315	120,657
Dec. 25	94,668	75,638

	1949	1948 (same week)
Jan. 1	82,979	65,573
Jan. 8	90,000	111,276

Estimated by Ward's Automotive Reports

Studebaker Retains Basic Lines

STUDEBAKER has retained its basic body types, with innovations in colors and striking upholstery fabrics and interior trim. Bumpers have been redesigned for more massive appearance and fit more snugly to the body. Stroke of the larger Commander series engine has been lengthened from 4⅜ to 4¾ inches, bringing power output up to 100 bhp at 3400 rpm, compared with the former 94 bhp at 3600 rpm. The smaller Champion series engine also shows improved performance through the adoption of a new carburetor and slight changes in the valve lift and intake manifold. Radiator capacity has been increased 10 per cent for better cooling. Radiator grilles and exterior trim on both series have been modified to provide altered appearance from the 1948 line.

Along with the model changes, Studebaker has announced price boosts ranging from $25 to $60 in the list prices of cars and trucks. The prices on the cars will be 1.3 to 3.5 per cent over the quotations on 1948 models. H. S. Vance, Studebaker chairman and president, said the increases were made to help offset rising manufacturing costs.

SAE Lists 24 Technical Sessions

THE SAE meeting schedule lists 24 technical sessions covering the usual widely varied fields of automobiles, trucks, busses, tractors and aircraft. In the materials category will be presentations on forging of high-temperature alloys, application of hot extrusion methods for automotive production, and steel compositions and specifications from both the producer's and consumer's vewpoints. On the score of automotive transmissions, O. K. Kelley of General Motors has a paper with a provocative title, "Is the Torque Converter Going to be It," which should attract considerable attention among transmission specialists because of General Motors' dual role in the field—torque converters for Buick and Chevrolet, and step-type automatics for Cadillac, Olds and Pontiac.

K-F Output Up 25 Per Cent

THE KAISER-FRAZER circus was calculated to inject a little pep into what some observers see as flagging sales of present models. A new taxicab has been added to the line and in the next two months a so-called utility car, a convertible and a steel-top sports sedan will be on assembly lines. K-F assembly rates were trimmed in December to around 650 daily, most of these the Kaiser model, and were suspended before Christmas for inventory. Operations were resumed last week at about the Decem-

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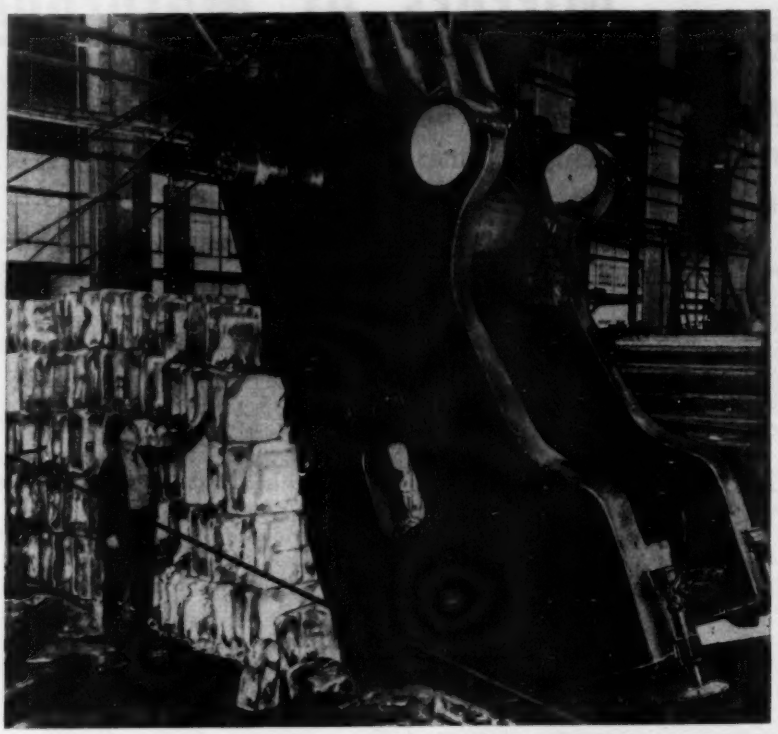


ELEMENTAL: Sixty tons of ice solved a problem in the rearrangement of machinery for Chevrolet's 1949 models. To ship a 138-ton, 20-ft press from Muncie, Ind., to Detroit, it was necessary to lay the press flat. Instead of resorting to heavy duty cranes, workmen stacked 350 cakes of ice back of the press and let them freeze into one solid block. Then the face of the block was chipped at an angle and the press tilted against the surface. As the ice melted, the press slowly sank to a horizontal position

ber pace. The year saw better than 180,000 cars built, a 25 per cent improvement over 1947, despite the fact December output was off 35 per cent from the same month the year previous. Recently the company has arranged for $20 million in new credit.

Hudson Ups Sheet Bar Shipments

REPORTS of a pending change in operation of the Hudson Motor Car Co.'s subsidiary, Valley Mfg. Co., at New Castle, Pa., are not confirmed by sheet bar shipment schedules for this mill.

A 50 per cent increase in January sheet bar orders is reported and another increase of 33-1/3 per cent is said to be under discussion. Sheet bar inventories have been reported virtually nonexistent at this plant, and it is said the company hopes to lay down at least a one-month stock to avoid shutdowns. The plant can roll about 7000 tons monthly.

The report concerning the Valley company arose from the fact that the Bossert Co., subsidiary of the Timken-Detroit Axle Co., recently signed a letter of intent agreeing to purchase from the War Assets Administration the old Shenango tin plate plant, part of which is occupied by the Valley company. This plant formerly was owned by the Carnegie-Illinois Steel Corp. and was operated during the war by the Aluminum Co. of America.

Under the new owner, operations of the Valley company will not be disturbed since it is protected by a lease negotiated a year ago and renewable for five years. Unoccupied areas of the plant will be equipped with machinery and tools for production of heavy stampings and forgings, along with fabrication, machining and heat treatment, according to Gilbert Butler, vice president, the Bossert Co., which now operates a plant in Utica, N. Y.

Bossert's letter of intent to purchase was dated Dec. 31 and equipment installation will be started immediately.

Ford Satisfied with 1948

PRIDEFUL backward glances at the 1948 record continue to be cast by automotive leaders. Henry Ford II, for example, looks with satisfaction on the production of 550,000 Fords, 151,000 Mercurys, 44,000 Lincolns, 303,000 Ford trucks and 104,000 tractors (United States only) despite the tremendous retooling job carried out early in the year. In September Ford built a total of 118,269 units of all types, the best single month since 1941. Ford sees a buyers' market "not too far away" but welcomes its return since his company's products were redesigned with an eye on a buyers' market and tough competitive selling. Output in 1949 should be better than in 1948, though not by much. Reasons—steel allocations, the ECA program and possible defense requirements. This year will see increasing emphasis by Ford on the matter of quality, both from its own manufacturing units and from suppliers. Further, considerable overhauling of the overseas operations is in prospect.

The 104,000 Ford tractors built last year amount to better than 20 per cent of all the wheel-type farm tractors built by the farm equipment industry, which registered record sales of more than $2 billion, or 25 per cent ahead of 1947. The striking advance in farm mechanization last year brought to 3,500,000 the number of tractors at work, compared with 1,500,000 in 1940. With the exceptions of tractors and harvesting equipment, the equipment industry saw a return to seasonal buying on many implements and an increase in installment purchases, both bellwethers of a buyers' market.

Willys Making 6-Cylinder Model

TRIMMING of assembly schedules on the Willys jeepster, of which 10,000 have been built since July, has allowed temporary diversion of additional steel to the universal jeep and jeep station wagon models, for which there is a considerable order backlog. A 50 per cent increase in schedules of these two types is in store for the immediate future. Transfer of station wagon body production to Briggs and the assumption of jeep body output at the Willys Toledo plant has aided in this realignment of the program, and demonstrates graphically how the inter-relation of the ten different vehicle types made by Willys permits quick shifts in production emphasis. Total assemblies for Willys last year ran to 137,000 units, compared with 120,000 the previous year. Of these 21,000 were 4-wheel drive trucks, 11,500 panel delivery trucks, 9000 two-wheel drive trucks and 4100 station wagons. As the year closed, the company started production of a new 6-cylinder station wagon, list price on which has been set at $1835, Toledo.

New Federal Hydraulic Flash Welder Makes Difficult Aluminum Welds Easy

Section cut through bus window frame, production welded in a single operation on the new Federal Flash Welder. Note variable thickness of section ranging from 1/8" to 5/8".

OPERATION HERETOFORE CONSIDERED IMPRACTICAL NOW A PRODUCTION LINE REALITY

The Federal Machine & Welder Company developed for one of the nation's largest manufacturers of bus window and door frames, a hydraulically operated flash welder that would weld together sections of aluminum framing. The new welder turned a difficult and costly job into an inexpensive, high speed production operation.

This is another example of Federal welding "know-how" — another reason why Federal is first in resistance welding.

FEDERAL HYDRAULIC FLASH WELDER OFFERS THESE *Exclusive Features*

1. No tools required to set up or change the amount of upset, flash, final platen opening, pre-heat or position of current cutoff.
2. Change in final platen opening will not affect any other adjustment.
3. Change in position of current cutoff will not affect any other adjustment.
4. Change in adjustment to increase or decrease the amount of upset or flash will not change the relation of current cutoff to upset, finish, amount of pre-heat or final platen opening.
5. Complete control over upset speed.
6. Advantage of a two-speed upset for the welding of aluminum and other material requiring a rapid closure and slower forging action for best results. The speed of the forging action is adjustable.
7. It is not necessary to change flashing cams to weld steel, aluminum, copper, brass, or cast iron in any cross sectional area within the capacity of the machine.
8. Time necessary for a new setup when changing the machine from welding one material to another is a matter of minutes, where a die change is not required.
9. Retractable stroke for loading and unloading odd shaped pieces or parts loaded over locating pins. This feature is incorporated as part of the design and does not require any extra mechanism.
10. Platen may be slightly retracted in order to flash weld parts that must be loaded tight together. This feature, too, is a part of the design, requiring no extra mechanism.

Federal® WELDERS

RESISTANCE WELDERS FOR EVERY APPLICATION • FROM 50-TON OBI TO 2000-TON DOUBLE ACTION

THE FEDERAL MACHINE AND WELDER COMPANY

Dept. 419, Warren, Ohio • • Offices in Principal Cities

Warco® PRESSES

Ads Tell Expansion Story

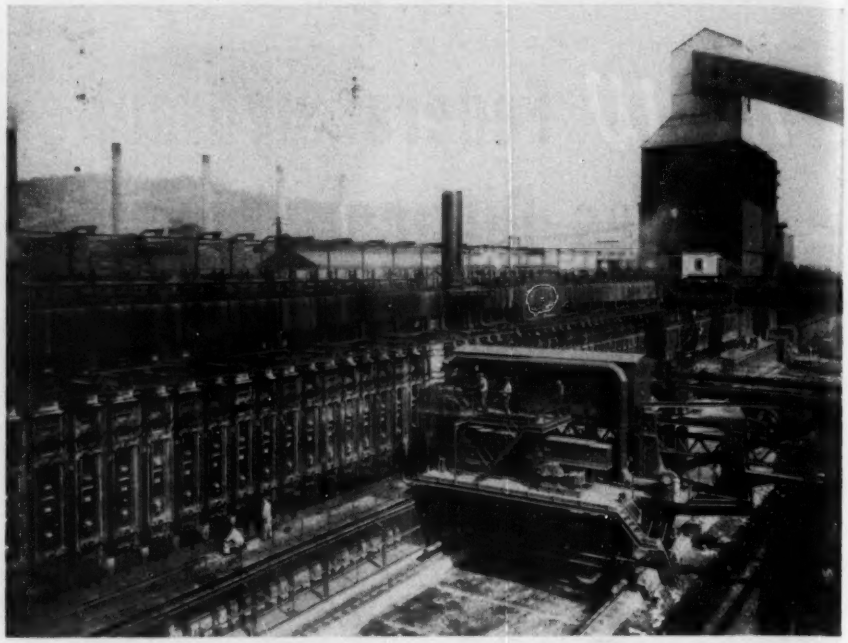
Jones & Laughlin spending $210 million for improvements, buys space to advise of benefits

A PROGRESS report on Jones & Laughlin Steel Corp.'s $210 million postwar improvement program is being carried to the public through advertisements appearing in metropolitan newspapers, local papers in towns where the company operates, and in leading magazines. Featuring a photograph of J & L's new cold strip mill at the Aliquippa plant, the advertisements stress the benefits that will accrue to the company's employees, customers and shareholders and to the general public through the expansion.

Fourth largest steel producer in the country, J & L has spent almost as much money for improvements since 1945 as its total worth at the end of that year. Capital for the program has been drawn from earnings and from cash borrowed against future earnings.

Partially Completed—Some phases of the program have been finished and already are helping increase and improve output. These include two new batteries of coke ovens, a fast cold rolling mill, a new open hearth furnace, and expansion of warehouse, ore mining and finishing facilities.

To be undertaken or completed this year are a large new coal washer, construction of six open hearths at Pittsburgh, enlarging of blast furnaces and installation of new turbo blowers, a new bessemer converter, and improvements to rolling mills, soaking pits, ore mines, coal mines, construction of a new boiler plant and installation of new handling equipment.



This new battery of 106 coke ovens, one of the largest batteries in the world, was placed in service at J & L's Aliquippa Works last year, a part of the company's postwar improvement program

Pitney-Bowes Sticks to Stamps

THAT the three-cent stamp could be made the basis for a multi-million dollar business has been proved by Pitney-Bowes Inc., Stamford, Conn., which soon begins its 30th year as a manufacturer of mailing meters and other postal devices.

In April, 1920, Universal Stamping Machine Co., Stamford, and American Postage Meter Co., Chicago, merged to form Pitney-Bowes Postage Meter Co. The new firm took its name from Walter H. Bowes, president of Universal who had invented a machine which would print prepaid, pre-canceled postage; and Arthur H. Pitney, Chicago inventor who had developed a postage meter which could be set by the post office for the amount of postage to be prepaid by the user. At the suggestion of post office authorities, these men got together and came up with an approved device.

An act of Congress made it legal, and in December, 1920, the first metered mail went through the Stamford post office, using the first postage meter. In 1922 the company began national activities. In that year $4,359,070 worth of U. S. postage was metered, a little more than 1 per cent of the total dollar volume of all mail. Today metered mail revenues approach $400 million annually, about one-third of all U. S. postage revenue.

Pitney-Bowes, a government-authorized manufacturer, leases its meter and is responsible for its proper operation, service and location. Other company products include cancelling and postmarking machines, tax-stamping apparatus, counting and marking devices, letter-opening machines and the Mailomat, a self-service, automatic post office.

Relines Blast Furnace in 38 Days

RELINING a blast furnace in record elapsed time of 38 days is reported by Great Lakes Steel Corp.

The accomplishment clipped seven days from the previous record for such a job at the Ecorse, Mich., plant and 21 days from the time required to reline the same furnace, the "A" unit, in 1943. The earlier record was established Sept. 5, 1947, with relining of the plant's "B" furnace. The latest "A" relining was accomplished in short time despite the fact that about three days were lost because of bad weather and mechanical difficulties.

The "A" furnace had produced 1,323,838 tons of pig iron in the 5-1/2 years of continuous operation when the relining became necessary. It was taken out of blast Nov. 12.

To Open Second Open-Pit Mine

STEEP ROCK Iron Mines stockholders have approved a plan to open a second large open-pit mine on the company's property to increase the rate of production to 3 million tons annually. Approval was given for raising $8 million of expansion capital by borrowing $5 million from the Export-Import Bank and by the sale of stock to private purchasers to net the remainder.

Westinghouse Equips Cyclotron

WESTINGHOUSE Electric Corp. is building electrical equipment to help pack a six-billion electron-volt "knockout punch" into the world's most powerful atom smasher.

Valued at about $1 million, the electrical apparatus will be installed on the $9 million atom smasher to be built on the Berkeley campus of the University of California. The new machine will be 17 times more powerful than the univerity's present cyclotron, which is the largest known to exist today. It is being constructed with funds provided by Atomic Energy Commission.

Briefs . . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

Geometric Tool Co., New Haven, Conn., division of Greenfield Tap & Die Corp., has appointed J. E. Haseltine & Co., Portland, Oreg., Seattle and Spokane, Wash., as a distributor of machinery and tools for cutting screw threads in Oregon, Washington, Montana and Idaho.

—o—

Committee for Economic Development has moved its Press Division from 55 W. 42nd St. to CED national headquarters at 444 Madison Ave., New York.

—o—

Cutler-Hammer Inc., Milwaukee, producer of motor controls, has moved its Indianapolis sales office to 644 E. Maple Rd. F. W. Gilchrist is in charge.

—o—

Lindberg Engineering Co., Chicago, manufacturer of industrial furnaces and related equipment, has established a new West Coast office at 5531 S. Vermont St., Los Angeles, with Stuart K. Oliver in charge. Pacific Scientific Co. will continue to handle Lindberg products as a sales agency co-operating with the new office.

—o—

Westinghouse Electric Corp. will build a laboratory in the Pittsburgh area to develop and construct an experimental atomic power plant for use in propulsion of naval vessels.

—o—

Revere Copper & Brass Inc., New York, has formed a Pacific Coast Division with headquarters at the company's new mill in Los Angeles. Wallace H. Hitchcock has been named manager of the division which includes Revere's district sales offices in San Francisco and Seattle.

—o—

General Electric Co., Schenectady, N. Y., has delivered the second of two 100,000-kw turbine generators for the Pacific Gas & Electric Co.'s Station "P" in San Francisco. PG&E installed 404,000 hp of new generating facilities on its power line during 1948.

—o—

National Lead Co., New York, has formed a new unit, St. Louis Smelting & Refining Division, to take over operations of St. Louis Smelting & Refining Co. and St. Louis Smelting & Refining Works.

—o—

Kidde Mfg. Co. Inc., Bloomfield, N. J., maker of knitting machinery, has acquired manufacturing and sales rights for the Aveco tricot machine from Aveco Inc., a subsidiary of American Viscose Corp.

—o—

Dunrite Industries Inc., Manitowoc, Wis., manufacturer of gray iron castings, will change its name, effective Feb. 1, to Manitowoc Grey Iron Foundry Inc. The management and ownership will remain the same.

—o—

Sterling Mfg. Co., Cleveland, producer of testing instruments, has appointed Kay Sales Co., Kansas City, Mo., as a distributor in Arkansas, Missouri, Iowa, Oklahoma, Kansas and Nebraska.

—o—

Caine Steel Co., Chicago, steel warehousing firm, has opened a sales office in the Empire Bldg., Milwaukee, to service the Wisconsin area. William Scott Harms is district representative.

—o—

White Sewing Machine Co., Cleveland, has purchased the Berea Road plant in Cleveland of Jack & Heintz Precision Industries Inc. for expanded production of sewing machines. Jack & Heintz, which has used the unit for manufacture of fractional horsepower motors, will continue to occupy the building for several months pending transfer of this division to Bedford, O.

—o—

Hyster Co., Portland, Oreg., has opened a new building to house the Los Angeles area sales and service organization for industrial trucks at 5301 Pacific Blvd., Huntington Park, Calif. L. W. Barclay is in charge.

—o—

Process Industries Engineers Inc. has been newly formed as a sales organization for engineering equipment and a designer and fabricator of special apparatus in the chemical and processing industries. Firm's mailing address is Box 5145, E. Liberty Station, Pittsburgh.

—o—

Columbia Steel Co., San Francisco, a U. S. Steel Corp. subsidiary, has appointed Perry Kilsby Inc., Los Angeles, as a distributor for Shelby seamless tubing manufactured by National Tube Co. and marketed on the West Coast by Columbia.

—o—

Steel Products Warehouse Association Inc., is now located at 602 Union Commerce Bldg., Cleveland. Clayton Grandy is president and executive secretary.

—o—

Electric Boat Co., New York, announces its Elco Division has begun production of an 18-ft automatic bowling alley. Production of Elco private yachts at Bayonne, N. J., has been halted and facilities diverted to manufacture of laminated bowling pins and the alleys.

—o—

Oscar Krenz Inc., manufacturer of chemical and food processing equipment, has consolidated its San Francisco and Oakland offices and plants at Ashby Ave. and Sixth St., Berkeley, Calif.

—o—

Gaertner Scientific Corp., Chicago, maker of precision and scientific instruments, has been left in trust by its late owner and president, William Gaertner, to the University of Chicago with the provision that the university run the business to insure jobs for veteran employees. The university must maintain the corporation as a business for 21 years after the death of Mr. Gaertner's widow, after which time the company may be disposed of as the university pleases.

—o—

James F. Lincoln Arc Welding Foundation, Cleveland, is sponsoring a new award program for welded bridge design. Prizes are offered to bridge or structural engineers for the best designs of a specified, welded highway bridge. First prize is $3000; second, $1500; third, $750. Ten honorable mention awards of $100 each will be granted. Competition opened Jan. 1 and closes June 30.

—o—

Landis Tool Co., Waynesboro, Pa., manufacturer of cylindrical grinding machines, has opened a district sales office in Indianapolis at 709 E. 38th St. A. J. Jones is district manager.

—o—

Bethlehem Steel Co., Bethlehem, Pa., reports its San Francisco Shipbuilding Division has received a contract from Tide Water Associated Oil Co. for cutting an AOG-type tanker in half and then lengthening it by 30 ft to increase capacity and convert it for commercial use.

—o—

Lehigh Structural Steel Co., Allentown, Pa., announces a $1000 annual scholarship, open to sons of employees, will be awarded by the company starting in 1949. The award has been designated the Thomas R. Mullen Jr. Annual Memorial Scholarship, in honor of the company vice president who was killed in an auto accident last November.

The Business Trend

INDUSTRIAL activity as measured by STEEL's index experienced the customary yearend holiday slump but did not dip to the levels of a year ago. The index for the week ended Jan. 1 registered 167 per cent (preliminary) of the 1936-1939 average and was at 155 per cent for the week ended Dec. 25. These marks were 19 and 14 points, respectively, over corresponding weeks a year ago.

STEEL—Weekly production of steel for ingots and castings, which dipped to 88 per cent of capacity for the week ended Dec. 25, following a 12-week period of unprecedented high-level activity, rose to 97.5 per cent of capacity for the week ended Jan. 1.

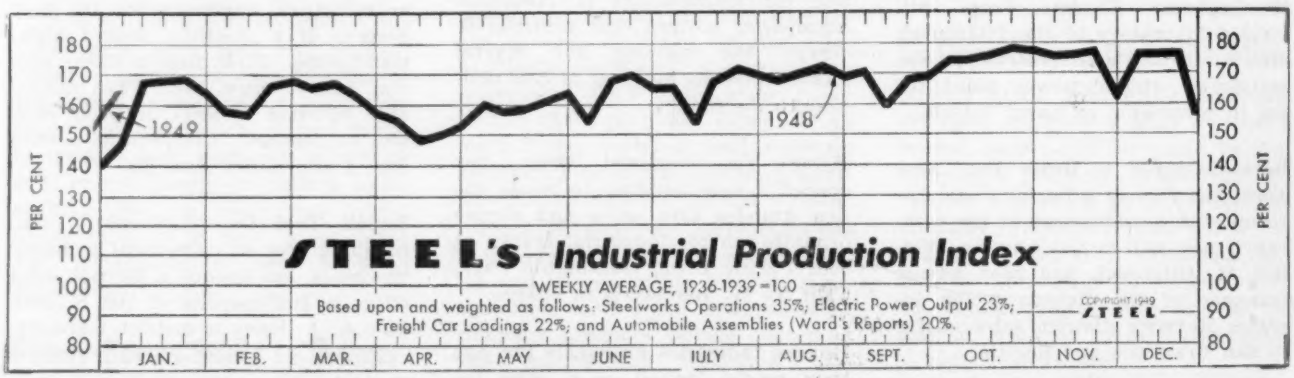
AUTOMOBILES—Following early December operations during which the postwar weekly production record was set, the outturn of passenger cars and trucks nosedived at the yearend due to model changeovers, shorter work weeks and absenteeism. A total of 82,979 units were produced in the week ended Jan. 1 and 94,668 the preceding week. Preliminary computations of 1948 production show a total of 5,535,089 units came off the assembly lines, second only to the 1929 record of 5,621,715 cars and trucks. Estimates of 1949 production by the automobile builders call for a total of 5,860,000 units, including 4,600,000 passenger cars.

CONSTRUCTION—The biggest construction year ever recorded was completed in 1948 by the U. S. construction industry. Dollar volume for all construction during the year reached a total of $17.4 billion and topped the previous mark set in 1947 by more than $3.7 billion. Forecast for 1949 is that the dollar volume will rise 4 per cent to $18 billion for all construction and 11.5 per cent to $7.9 billion for heavy engineering construction.

CARLOADINGS—Loading of revenue freight totaled 42,833,902 cars in 1948 and represented a decline of 3.7 per cent from the 1947 total, according to the Association of American Railroads. Freight carloadings in the first quarter of 1949 are expected to be 2.1 per cent above the like period last year on the basis of estimates by Shippers Advisory Boards.

PETROLEUM—Stocks of refined products on Nov. 1, 1948, amounted to 337.4 million barrels and were 59.3 million barrels higher than on the same date a year ago, according to Bureau of Mines. Further increases in stocks are not believed necessary in 1949 and consequently, an increase of 2.4 per cent in new supply will provide for an estimated gain of 5.8 per cent in total demand. Total demand for petroleum in 1949 is forecast at 2,390,000,000 barrels, of which 200 million barrels will be imported.

SALES—Total manufacturers' sales during November amounted to $18.2 billion, about $600 million below those in October but equal in daily value because of one less working day in November, according to the Commerce Department. Durable goods industries reported sales of $7.5 billion during November, about $250 million below the October total but slightly higher on the daily average basis.



Index (chart above): Week ended Jan. 1 (preliminary) 167 Previous Week 155 Month Ago 178 Year Ago 148

BAROMETERS of BUSINESS

INDUSTRY	Latest Period*	Prior Week	Month Ago	Year Ago
Steel Ingot Output (per cent of capacity)†	97.5	88.0	100.0	97.0
Electric Power Distributed (million kilowatt hours)	5,470	5,550	5,646	4,868
Bituminous Coal Production (daily av.—1000 tons)	1,417	1,866	1,666	1,400
Petroleum Production (daily av.—1000 bbl)	5,600‡	5,641	5,615	5,291
Construction Volume (ENR—Unit $1,000,000)	$78.1	$173.2	$362.3	$54.4
Automobile and Truck Output (Ward's—number units)	82,979	94,668	125,170	65,573

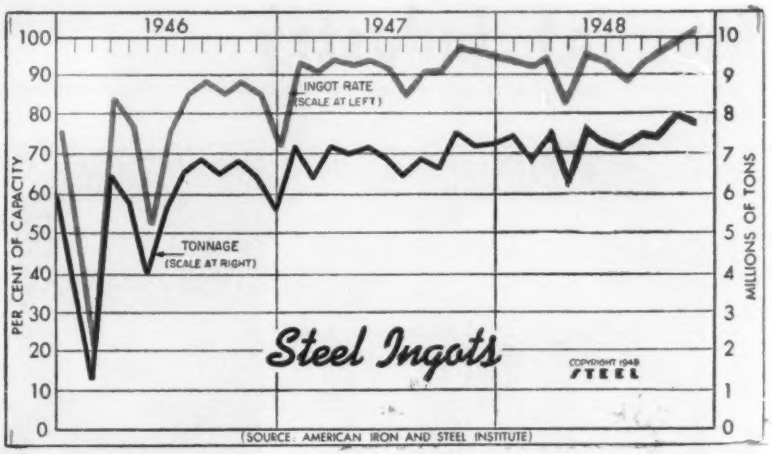
* Dates on request. † 1948 weekly capacity was 1,802,476 net tons. ‡ Preliminary.

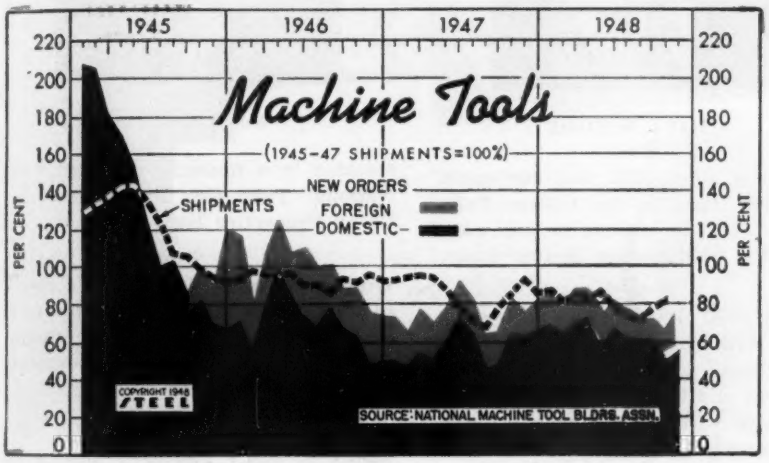
TRADE				
Freight Carloadings (unit—1000 cars)	†630	609	804	682
Business Failures (Dun & Bradstreet, number)	128	116	126	58
Money in Circulation (in millions of dollars)‡	$28,325	$28,560	$28,322	$28,971
Department Store Sales (changes from like wk. a yr. ago)‡	+32%	none	−5%	+27%

† Preliminary. ‡ Federal Reserve Board.

Steel Ingots

	Production (Net Tons—000)			Operating Rate (% of Capacity)		
	1948	1947	1946	1948	1947	1946
Jan.	7,473	7,213	3,873	93.6	93.0	49.6
Feb.	6,940	6,422	1,393	93.0	91.7	19.8
Mar.	7,608	7,307	6,509	95.3	94.3	83.3
Apr.	6,218	7,043	5,861	80.4	93.8	77.5
May	7,560	7,329	4,073	94.7	94.5	52.2
June	7,256	6,969	5,626	93.8	92.8	74.4
July	7,069	6,570	6,619	88.7	84.9	84.9
Aug.	7,438	6,982	6,924	93.1	90.1	88.7
Sept.	7,416	6,789	6,556	96.1	90.6	86.9
Oct.	7,987	7,560	6,952	100.0	97.5	89.0
Nov.	7,763	7,233	6,458	100.4	96.3	85.4
Dec.	....	7,366	5,760	...	95.2	73.9
Total		84,784	66,603	Ave.	92.9	72.5





Machine Tools

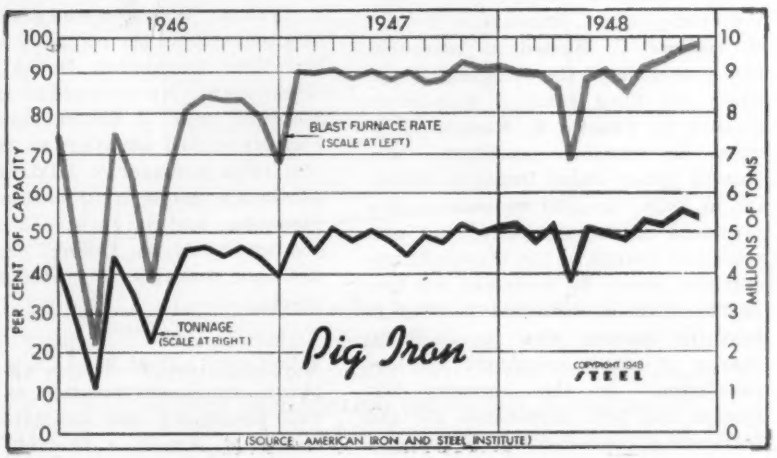
(1945-47 Shipments=100)

	Orders—Total		Orders—Domestic		Shipments (3 Mos. Ave. Centered)	
	1948	1947	1948	1947	1948	1947
Jan.	83.1	71.7	69.1	50.7	86.9	93.1
Feb.	77.3	63.8	64.6	48.0	81.9	94.8
Mar.	86.3	74.3	70.2	54.2	84.2	95.4
Apr.	86.3	69.8	72.2	51.0	82.7	94.3
May	73.5	76.9	62.1	60.6	86.3	88.9
June	83.4	90.9	71.5	73.7	79.9	79.5
July	74.0	81.1	61.1	64.4	75.3	71.0
Aug.	73.7	62.1	60.9	47.5	72.3	68.6
Sept.	73.1	63.7	61.5	49.0	78.3	78.5
Oct.	67.4	81.0	53.4	65.0	80.2	85.5
Nov.	73.0	75.6	54.5	64.1	...	92.6
Dec.	...	81.1	...	66.3	...	86.1

Pig Iron*

	Production (Net Tons—000)			Operating Rate (% of capacity)		
	1948	1947	1946	1948	1947	1946
Jan. ...	5,194	5,071	2,644	90.9	90.8	47.4
Feb. ...	4,838	4,550	1,148	90.6	90.3	22.2
Mar. ...	5,020	5,123	4,424	87.8	91.8	77.3
Apr. ...	3,840	4,830	3,614	69.4	89.3	65.2
May ...	5,077	5,081	2,274	88.8	91.0	39.8
June ...	4,990	4,810	3,682	90.2	89.0	66.5
July ...	4,900	4,585	4,705	85.9	90.3	82.4
Aug. ...	5,255	4,916	4,898	92.0	88.1	85.6
Sept. ...	5,208	4,801	4,687	94.3	89.0	84.8
Oct. ...	5,520	5,228	4,814	96.6	93.6	84.1
Nov. ...	5,399	5,015	4,435	97.6	92.8	80.0
Dec. ...	....	5,177	3,992	...	92.9	69.9
Total		59,210	45,318	Ave...	90.1	67.4

* Includes ferromanganese and spiegeleisen.



FINANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$13,705	$15,998	$12,543	$12,986
Federal Gross Debt (billions)	$252.3	$252.4	$252.6	$256.9
Bond Volume, NYSE (millions)	$16.7	$16.3	$16.5	$22.6
Stocks Sales, NYSE (thousands)	7,027	5,033	6,352	4,818
Loans and Investments (billions)†	$63.1	$62.9	$62.5	$65.3
United States Gov't. Obligations Held (millions)†	$33,455	$33,440	$33,073	$37,366

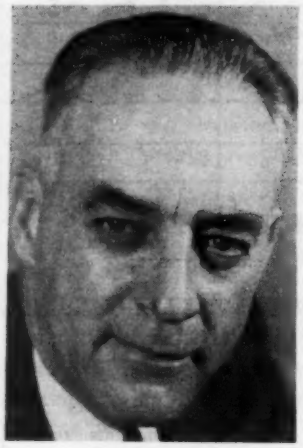
† Member banks, Federal Reserve System.

PRICES

STEEL's composite finished price average	$95.50	$95.50	$95.50	$78.05
STEEL's Nonferrous Metal Composite‡	232.6	232.6	232.6	186.2
All Commodities†	163.5	163.8	165.1	164.5
Metals and Metal Products†	173.8	173.8	173.8	151.9

† Bureau of Labor Statistics Index, 1926=100. ‡ 1936-1939=100.

Men of Industry



BERNARD H. McGUINESS

ALBERT L. WILLIAMS

BANKS E. EUDY

Bernard H. McGuiness, for three years works manager of the Passaic, N. J., plant of Hewitt-Robins Inc., materials-handling machinery manufacturer, has been appointed vice president of the company's Robins Conveyors Division. He joined the company in 1923, and for many years was general superintendent of installations of Robins Conveyors Division.

—o—

Chase Brass & Copper Co. Inc., Waterbury, Conn., announces election of **Wallace C. Husted** as executive vice president of the company, a position not filled since it was relinquished by **Charles E. Hart** in 1942, when he became president. Mr. Husted joined Chase Brass & Copper Co. in 1929. In 1944 he became vice president of the company, and was placed in charge of the Cleveland operations, where he remained for two years, when he returned to Waterbury to become vice president in charge of plant operations and organization. In this capacity Mr. Husted has been responsible for the fabricating operations at Waterbury Mfg. Co. and at the Noera Mfg. Co., as well as for the mill operations at the Chase metal works plant.

—o—

A. C. Belles has been appointed assistant to the manager of operations, Union Drawn Steel Division, Republic Steel Corp., Cleveland. He has been superintendent of the Beaver Falls, Pa., plant of the division and is succeeded in that post by **T. M. Girdler Jr.,** who has held the position of assistant superintendent. In his new position Mr. Belles will work with all Union Drawn plants on mechanical problems. He has been with Union Drawn Steel Division and predecessor companies since 1902, and has spent his entire time in the Beaver Falls plant. For the present he will continue his residence in Beaver Falls.

—o—

International Business Machines Corp., New York, has elected **Albert L. Williams** to the position of vice president and treasurer. He has been associated with the company in various positions since 1936, and has held the position of treasurer since 1947. In 1941 Mr. Williams was given leave of absence from the company to serve the War Production Board, U. S. Government. He returned to IBM the following year. **J. Lester Turney** has been appointed assistant to the general sales manager of IBM. He was previously manager of customer engineering, and is succeeded in that position by **M. R. Dilling,** previously assistant manager of customer engineering.

—o—

Allegheny Ludlum Steel Corp., Pittsburgh, announces creation of a new vice presidency and appointment of **Robert M. Arnold,** a director, to that position. Mr. Arnold is also president of Arnold Engineering Co., Chicago, a subsidiary company. He became secretary and chief engineer of Arnold Engineering Co. in 1935, and was named its president six years later. His company was acquired by Allegheny Ludlum in January, 1946.

—o—

Hydraulic Press Mfg. Co., Mt. Gilead, O., announces appointment of **George A. Daniels** as secretary and treasurer. He succeeds **W. C. Batchelor,** resigned after 33 years of service. Mr. Daniels has served the H-P-M Co. as controller for the past two years. Before joining the company he was associated in a financial capacity with National Tube Co., Pittsburgh, and Union Properties Inc., Cleveland.

—o—

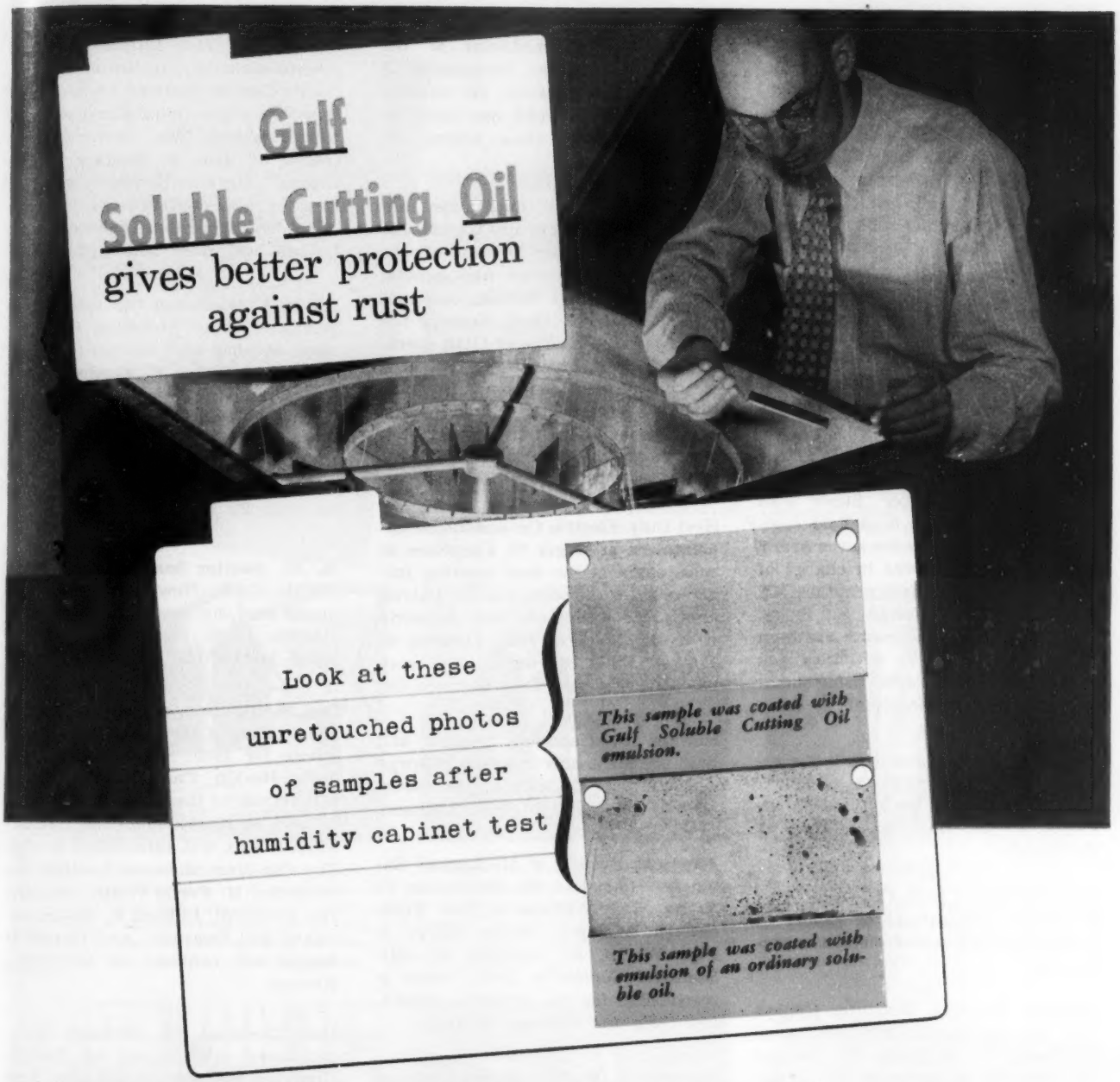
William Seymour Jr. has been elected vice president, Joseph T. Ryerson & Son Inc., Chicago. **C. L. Hardy** was elected assistant vice president, and **Thomas G. Miller,** secretary.

—o—

Banks E. Eudy has been named as manager of a new division of American Steel & Wire Co., Cleveland, which will be known as the Stainless Steel Products Sales Division, and **C. Richard Horwedel** was appointed assistant manager. Both men are authorities on stainless and other high alloy metals, together having a combined record of 44 years of service in stainless steel manufacture and merchandising. Mr. Eudy's first position in the steel industry was with Allegheny Steel Co., with which he was associated from 1917 to 1936. He joined the Stainless Division of Carnegie-Illinois Steel Corp., and was transferred in 1947 to American Steel & Wire, where he headed the stainless steel unit, forerunner of the new division now established. Mr. Horwedel joined this subsidiary company of U. S. Steel Corp. in 1930, and has been identified with its metallurgical department since then.

—o—

E. S. Coldwell has been elected president, Ford, Bacon & Davis Inc., New York, succeeding **James F. Towers,** who will actively continue as chairman of the board of directors. Mr. Coldwell will at the same time succeed Mr. Towers as president of Ford, Bacon & Davis Construction Corp., Monroe, La., a wholly owned subsidiary of Ford, Bacon & Davis Inc.,


Gulf
Soluble Cutting Oil
gives better protection
against rust
Look at these
unretouched photos
of samples after
humidity cabinet test
This sample was coated with Gulf Soluble Cutting Oil emulsion.
This sample was coated with emulsion of an ordinary soluble oil.

Here's protection for metal parts being machined in your shop! The excellent rust preventive properties of Gulf Soluble Cutting Oil prevent rust formation between processes or when the job is left on the machine. It keeps highly finished surfaces bright longer!

The two samples shown above tell the story! Both have been exposed to a controlled flow of 120°F. air saturated with water (Relative Humidity—100%) for a period of more than two hours.

Note the startling difference! The sample coated with an emulsion of Gulf Soluble Cutting Oil shows no signs of rust formation even at the plate corners, which are more difficult to protect. The sample coated with an ordinary soluble oil emulsion is spotted with rust marks, many of which have marred the surface permanently.

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☐ Practical slide-rule-type calculator for help in maintaining desired soluble oil concentrations.

Name.....

Company.....

Title.....

Address.....

of which Mr. Towers also continues as chairman of the board.

—o—

Iron & Steel Products Inc., Chicago, announces appointment of **Arthur G. Lohse** as vice president in charge of its New York office, filling the vacancy caused by the retirement of **David Newhall** and **John S. Wood.** Mr. Lohse will be assisted by **Arthur D. Huff Jr.,** formerly of Allied Chemical & Dye Corp., Barrett Division.

—o—

American Steel Foundries, Industrial Division, announces retirement from active business of **Paul Gerhard,** its sales representative at Philadelphia. He leaves the steel casting industry after 42 years of service.

—o—

Milton J. Steffes has been appointed general sales manager, Super Tool Co., Detroit. He had been field engineer for the company for seven years, and more recently was in charge of the carbide tool research program. Mr. Steffes succeeds **Harold E. Berry,** who for reasons of ill health has been obliged to curtail his activities and is now serving as advertising manager as well as consultant in sales.

—o—

Joseph R. Parsons has joined the research department of Harbison-Walker Refractories Co. as a research engineer at its Hays Laboratory at Pittsburgh.

—o—

Erie Malleable Iron Co., Erie, Pa., announces appointment of **Emery C. Prior** as its Cleveland district representative.

—o—

Midwest Research Institute, Kansas City, Mo., announces appointment of **Dr. George E. Ziegler** as director and **Dr. Clayton O. Dohrenwend** as assistant director. Dr. Ziegler joined the institute at its inception in 1945 as executive scientist, having previously been with Armour Research Foundation in Chicago. He has been acting chief administrator of the institute since the resignation of **Harold Vagtborg** some six months ago. Dr. Dohrenwend has been research consultant since joining the institute in 1946.

—o—

Kennecott Copper Corp. has announced retirement of two top officials of its Utah Copper Division—**D. D. Moffat,** vice president and general manager, and **J. D. Shilling,** assistant general manager. **J. C. Kennear** has been placed in charge of Utah operations of the corporation. He is a vice president of the company. **Louis Buchman** has been appointed general manager of the Utah Copper Division, and **E. W. Englemann** was named assistant general manager.

—o—

Hevi Duty Electric Co. announces appointment of **Roger W. Carothers** as sales engineer for heat treating furnaces and transformers in the Detroit area. Mr. Carothers was formerly with the Steel & Tube Division of Timken Roller Bearing Co. and more recently was with Dow Furnace Co.

—o—

Howard G. Hammer, founder and first president and treasurer, George J. Hagan Co., Pittsburgh, has retired after 41 years in the furnace business.

—o—

American Society of Mechanical Engineers announces the designation of **Frank S. G. Williams** of New York, eastern manager, Taylor Forge & Pipe Works, as chairman of ASA Sectional Committee B-31, which is responsible for the American Standard Code for Pressure Piping.

—o—

Clarence C. Walker has been elected a vice president, and **Ralph M. Darrin,** a commercial vice president, General Electric Co., Schenectady, N. Y. Mr. Walker is general manager of the company's Construction Materials Department. Mr. Darrin, formerly general manager, Apparatus Department's Central Stations Division, will supervise customer-relations work in New England. Mr. Darrin is succeeded by **John J. Heuther** in the Central Stations Divisions, and Mr. Heuther also continues as manager of the Transportation Division, a post he has held since last April.

—o—

Albert J. Doermann has resigned as president, Titan Abrasives Co., Chicago, and has been elected chairman of the board. **Leo E. Jacobs** has resigned as executive vice president, Charles H. Besly & Co., Chicago, and will become president of Titan. The Besly company has been the exclusive distributor for Titan products for over 25 years.

—o—

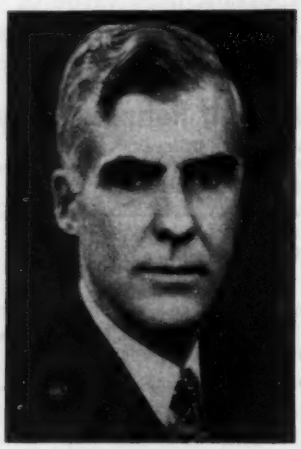
A. W. Sautter has joined DuBetta Metals Corp., New York. He formerly was vice president, Aluminum Reserve Corp. and partner of Alloyed Metals Co.

—o—

Dan M. Heekin has been elected president of the Can Manufacturers Institute for 1949. Mr. Heekin, president, Heekin Can Co., Cincinnati, will return to the office he previously held as president of the institute when it was first established in 1938. The Can Manufacturers Institute has re-elected **H. Ferris White,** executive vice president, **Clifford E. Sifton,** secretary and treasurer, and **Harold H. Jaeger** will continue as advertising director.

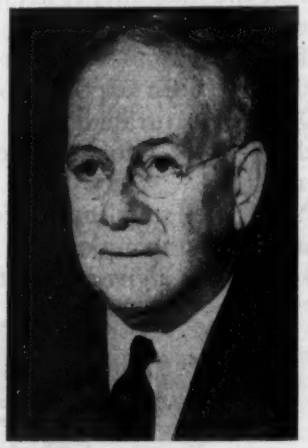
—o—

Dow Chemical Co., Midland, Mich., announces appointment of **Leo B. Grant** as manager of its New York sales office, succeeding the late **Ralph E. Dorland.** Mr. Grant was associated with Dow's Magnesium Division at Midland for 20 years be-



DR. GEORGE E. ZIEGLER

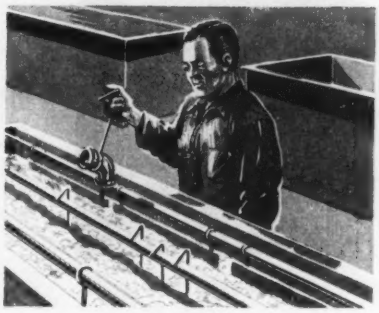
FRANK S. G. WILLIAMS



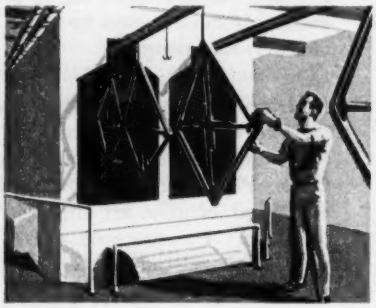
DAN M. HEEKIN

which job can you do better with Oakite metal-cleaners?

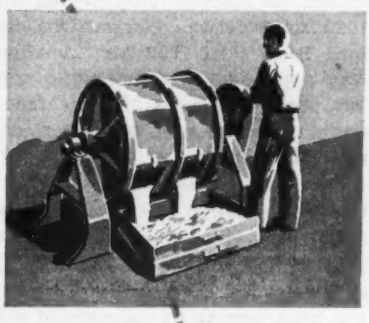
PICKLING? Oakite Pickle Controls minimize attack on steel; don't retard action on scale, rust. Prevent waste of acid after scale or rust dissolves. They inhibit hot sulphuric-acid and hydrochloric-acid pickling baths.



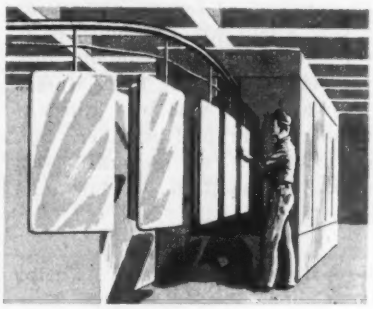
ELECTROCLEANING? Oakite Composition No. 90 removes oils, smuts, films that interfere with good electrocleaning on steel. Has high conductivity, good wetting action. Bubbles keep alkaline spray from being nuisance, yet prevent explosive foam.



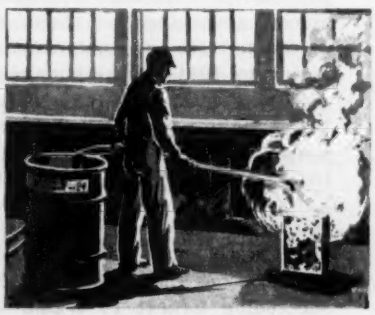
PRECLEANING? In spray-washing machines, Oakite Composition No. 97, emulsifiable solvent cleaner with water, removes buffing and other compounds from steel, cast iron, brass, aluminum, zinc. Gives temporary rust prevention. Use before electrocleaning, plating.



BALL BURNISHING? Oakite Composition No. 3 lubricates, "suds up" even in hard water. Free of metal-harming ingredients. Suspends dirt, keeps it from smudging work. Brings out brilliant luster on metal. Also good to clean shots, shapes.



PRE-PAINT TREATMENT? Oakite CrysCoat Process conditions iron, steel, zinc, copper alloys 3 ways: removes light oils, spinning compounds; develops phosphate film that *holds* finishes; inhibits rust before and after finish. Low cost per sq. ft.



STEAM CLEANING? Oakite Composition No. 92 removes grease and dirts quickly. No toxic vapors. Detergency combines with steam pressure to clean fast. Good on big parts. All you need is hose, gun, solution container, 40 lbs. steam pressure.

PRECLEANING IN TANK? Oakite Compound No. 36, acidic cleaner conditions aluminum for paint. Makes surfaces inert as possible. Provides microscopic phosphate film ideal for tenacious finish adhesion. Guards against scratched-finish corrosion.

. . . every job and at lower per-unit cost. For free proof, check here:

☐ machine precleaning ☐ pickling
☐ ball burnishing ☐ steam cleaning
☐ precleaning in tanks ☐ prepaint treatment
☐ electrocleaning

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Specialized Industrial Cleaning
MATERIALS • METHODS • SERVICE

GEORGE O. WITH

DWIGHT L. MERRELL

HAROLD E. CHURCHILL

fore joining the executive staff of its New York office about a year ago.

—o—

George J. Neumann has been elected a vice president of Lehigh Structural Steel Co., Allentown, Pa., and **Leo I. Bruce,** secretary. Mr. Neumann, former secretary, succeeds **T. R. Mullen Jr.,** vice president who was killed in an auto accident in November. Mr. Bruce continues as general sales manager, in addition to his new duties.

—o—

Wylie Brown, president, Phelps Dodge Copper Products Corp., New York, has been elected chairman of the board of directors, and will continue as chief executive officer of the corporation. **Whipple Jacobs,** formerly president, Belden Mfg. Co., Chicago, has joined Phelps Dodge Copper Products Corp. as president. Mr. Brown has been president since the corporation was founded.

—o—

J. C. Fink has been appointed manager of the industry engineering department, Westinghouse Electric Corp., Pittsburgh.

—o—

J. R. Cameron, active in the home appliance business since 1922, has returned to the Norge Division, Borg-Warner Corp., Detroit, as assistant to **Harry L. Spencer,** director of manufacturing. He first joined Norge in 1927 and for the past four years has been manufacturer's agent handling industrial products in the Detroit area. Prior to that time he had been for 11 years manager of national service on all Norge products.

—o—

William V. McAllister retired Dec. 31 after 44 years of service with Riley Stoker Corp., Detroit. Born and educated in Canada, he went to Detroit in 1904 as bookkeeper with Murphy Iron Works, becoming purchasing agent in 1915. In 1917 this company was taken over by Sanford Riley Stoker Co. but continued to be known as Murphy Iron Works until 1920, when it was merged with Sanford Riley. In 1922 Mr. McAllister was appointed plant manager, serving until 1942 when he became director of purchases, the position he now leaves.

—o—

George O. With has been appointed assistant vice president, United States Steel Supply Co., Chicago, subsidiary of U. S. Steel Corp. He has been serving as manager of sales, construction industries, of Carnegie-Illinois Steel Corp. since 1937. **Dwight L. Merrell** has been appointed to succeed Mr. With at Carnegie-Illinois. He had been assistant to Mr. With since 1947.

—o—

Walter P. Carroll has been appointed manager of the metal department, National Lead Co., New York, succeeding **C. A. Geatty,** retired. Mr. Carroll was formerly manager of the Chicago branch, and is a director of the company.

—o—

Victor G. Lottmann has been appointed assistant to the executive vice president of Ford Motor Co., Dearborn, Mich. He will continue to direct commodity research for the Purchasing Division, and assumes the additional duties under **Ernest R. Breech,** executive vice president.

—o—

William S. Harms has been appointed district representative in charge of a new Milwaukee sales office, Caine Steel Co., Chicago. He formerly was with Carnegie-Illinois Steel Corp. and Bucyrus-Erie Co.

—o—

Eugene K. Wright has been appointed sales manager, Manufacturers' Division, Continental Steel Corp., Kokomo, Ind. He became connected with the company in 1939 as sales representative of the Manufacturers' Division. Mr. Wright takes over the position formerly held by **K. H. Striebel,** who has resigned.

—o—

Andrew K. Foulds, patent counsel for two of the subsidiaries of American Radiator & Standard Sanitary Corp., Pittsburgh, has been appointed patent counsel for the entire corporation. He succeeds **C. G. Heylmun,** who retired on the company's retirement plan.

—o—

Harold E. Churchill has been appointed director of research in the Engineering Division of Studebaker Corp., South Bend, Ind. A Studebaker engineer since 1926, he joined the company as an assistant laboratory engineer, advancing to laboratory engineer in 1938, assistant research engineer in 1941, research engineer in 1943 and chief research engineer in 1944. He is a specialist on transmissions, axles, steering and ride control of passenger cars.

—o—

Herbert J. Rosen, formerly executive vice president, Griffin Wheel Co., Chicago, has been elected president, succeeding **Ernest P. Waud,** who is now chairman of the company's executive committee.

—o—

William G. Davis Jr. has been named superintendent of production planning at the Pittsburg, Calif., plant of Columbia Steel Co., and **Robert E. Williams,** whom Mr. Davis succeeds, will be director of production planning, with headquarters in San Francisco. **Gordon White** will be assistant superintendent of that department at Pittsburg.

—o—

Delbert A. Rizor, formerly vice president in charge of sales, Dexter

Co., Fairfield, Iowa, manufacturer of household washers, has been advanced to the post of vice president, assistant to **T. B. Hunt,** president. **Harvey Hunt** has been appointed sales manager.

—o—

Calvin W. Verity has resigned as director and also as chairman of the Finance Committee, Armco Steel Corp., Middletown, O., and has accepted the position as general consultant for the company.

—o—

Link-Belt Co., Chicago, announces that **R. E. Whinrey,** formerly superintendent, has been appointed to the newly created position of assistant general manager, Link-Belt Dodge plant in Indianapolis; and **L. C. Heinlein,** formerly assistant superintendent, has been appointed superintendent of this plant.

—o—

Four promotions on the staff of Lukens Steel Co., Coatesville, Pa., recently announced are: **Harry A. Fohl,** master mechanic since 1945, named assistant to the chief engineer; **Reuben G. Uhler,** assistant superintendent of mechanical maintenance, named superintendent of mechanical maintenance; **Malcolm B. Antrim,** electrical engineer, named assistant superintendent of electrical maintenance; and **Clifford W. Burdick,** junior electrical engineer, named assistant electrical engineer.

PHILIP H. CLAPP JR.

Who has been appointed sales manager, Engineered Castings Division, at Rochester, N. Y., for American Brake Shoe Co. Noted in STEEL, Dec. 27 issue, p. 50

ALEXANDER S. KELLER

Pratt & Whitney Division, Niles-Bement-Pond Co., appointed senior industry officer, Netherlands Mission, Economic Cooperation Administration. Noted in STEEL, Dec. 27 issue, p. 50

—o—

Clare C. Bostedor has been appointed director of programming and production control for Lincoln-Mercury Division, Ford Motor Co., Detroit. The appointment consolidates scheduling with purchase follow-up, as well as shipping, receiving and material handling at the Lincoln plant, and Mr. Bostedor also will functionally direct similar activities at the division's branch plants in Metuchen, N. J., St. Louis and Los Angeles.

—o—

Harry B. Miller has been appointed chief engineer in charge of design and development, Money-Meters Inc., Providence, R. I.

OBITUARIES . . .

James S. Douglas, 80, prominently identified with the copper mining industry in the Southwest for many years, died at his home in Montreal, Canada, Jan. 2. He helped establish the United Verde Extension Mining Co., of which he remained president from its organization in 1912 until it ceased mining operations in 1938. Mr. Douglas is survived by two sons, Lewis W. Douglas, American Ambassador to Britain, and James Douglas, secretary of Phelps Dodge Corp.

—o—

William J. Buttfield, 85, president, Vulcan Detinning Co., Sewaren, N. J., died Dec. 30. He served from 1943 to 1946 on the board of directors, Continental Can Co.

—o—

Theodore W. Robinson, 86, retired vice president of the Illinois Steel Co., Chicago, now a part of Carnegie-Illinois Steel Corp., and chairman of the board of Ditto Inc., died Dec. 30 at Palm Beach, Fla.

—o—

George V. Parkins, 69, who joined McKeesport Tin Plate Co., McKeesport, Pa., as vice president and director in 1901, died Dec. 29. He became president in 1936 and retired a year later when the company's tin plate mill was sold to Jones & Laughlin Steel Corp. He assumed directorship of the company's Tin-stamping Division, which continued under the name of National Can Co.

—o—

David P. Graham, executive vice president, Peabody Engineering Corp., New York, died recently.

—o—

Henry G. Weaver, 59, director of customer research for General Motors Corp., Detroit, died Jan. 3. He started with the Hyatt Bearing Division of the corporation in 1921 as head of market research, and was named head of GM customer research in 1933.

—o—

R. C. Helm, 58, an executive of the American Steel & Wire Co., Cleveland, and associated with the company 35 years, died Jan. 3. From 1941 to 1945 he was superintendent of the American Works, Cleveland, and was transferred to the company's general office for special work on the staff of the vice president in charge of operations.

—o—

John W. Scoville, 68, retired economist, for many years associated with Chrysler Corp., Detroit, died Jan. 3 at Anniston, Ala., while enroute to Florida.

—o—

Norman S. Burdett, 44, treasurer, Service Machine Co., Elizabeth, N. J., manufacturer of tools and dies used in making precision instruments, died in Plainfield, N. J., Dec. 29.

—o—

Alistes Leonard Jr., 45, director of industrial relations, Thor Corp., Chicago, died recently.

—o—

Fred E. Gardner, co-founder and for 30 years general manager of Gardner Machine Co., Beloit, Wis., died recently. He left Gardner's in 1935, and became a tool engineer at Fairbanks, Morse & Co.

—o—

Charles A. Meier, 72, president, George A. Feld Co., New York, died Dec. 25.

—o—

Charles R. McDonald, 74, retired vice president, International Harvester Co., Chicago, died recently. He was in charge of manufacturing at the time he retired in 1938.

—o—

Nat K. Freeman, 58, president, Fluorescent Equipment & Mfg. Co., Cleveland, died Jan. 2 in Miami Beach, Fla.

Because chain is "born" in steel mills, chain shortages will continue!

DEFENSE needs and European Recovery Plan allotments will consume approximately 20 million tons of American steel in 1949.

This means that steel makers, even if they increase production over last year's all time high of approximately 88,700,000 tons, will be unable to fill many of the requirements of their customers.

Shortages of certain types of chain are certain to continue throughout 1949.

Therefore, we regret that we cannot, in the near future, guarantee to fully meet all of your chain needs.

We pledge, however, that we will continue, as during the war and in the immediate past, to do everything in our power to serve you within the limits of available steel. *Also, we will try to apportion our output fairly and justly among our established distributors . . . knowing that they, in turn, will deal equitably with their dealers.*

In this situation we will be grateful for your considerate support and cooperation. We trust you will understand that our only wish is to serve you to the best of our ability.

Vice Pres., Charge of Sales

A few items in the Cleveland line have been temporarily discontinued. Available steel is being directed into productive channels where customer demand and need are greatest.

CLEVELAND CHAIN

The Cleveland Chain & Mfg. Co.

Cleveland 5, Ohio

Associate Companies: David Round & Son, Cleveland 5, Ohio • The Bridgeport Chain & Mfg. Co. Bridgeport 1, Conn. • Seattle Chain & Mfg. Co. Seattle 8, Wash. • Round California Chain Co. So. San Francisco and Los Angeles 54, California Woodhouse Chain Works, Trenton 7, N. J.

Since DR DAVID ROUND *1869*

Certified CHAIN INSTITUTE Member

Security In Every Link

Engineering News . . . AT A GLANCE

ELECTRICALLY-PRODUCED ACETYLENE—Synthetic acetylene gas soon may be available as a result of a new process revealed by Dr. Eugene P. Schoch, director, bureau of industrial chemistry, University of Texas, at a regional meeting of the American Chemical Society. In the new process, which is based on the principle of the neon light, the chief constituent of natural gas, methane, is converted to acetylene by an electric current. Process involves blowing a steady stream of methane through a hollow casing containing two rotating wheels which are supplied with an electric current. Efficiency of the technique is said to be remarkably great.

CUTS DOWN PLATING STATIONS—Bright chromate coatings now may be obtained by using as few as three stations after plating when employing the latest dip developed by Allied Research Products Inc., Baltimore. Created especially for automatic zinc plating installations, the formulation is reported to provide a coating that permanently brightens zinc, resists stains and offers good corrosion resistance. Degree of brightness and corrosion resistance easily can be controlled by the operator.

COST "SHRINKER"—Cost of finishing oil pump bodies is sharply reduced by a special machine designed by Cross Co., Detroit. Operations—performed at the rate of 63 pieces per hour—include milling both ends, drilling two mounting holes on the left end, drilling and tapping four cover holes on the right end, drilling and reaming two bearing holes, roughing and semifinishing two gear pockets and forming a pressure relief cavity. The machine includes ten stations with an independent station for loading and unloading. It actually cuts nine pieces at a time progressively.

MEETS SUB-ZERO REQUIREMENTS—Refrigeration systems, aircraft and automotive equipment are some of the many applications to benefit from a new butaprene-based rubber compound developed recently by Stalwart Rubber Co., Bedford, O. Development is especially suitable for uses in which rubber must meet very low temperatures for prolonged periods and still retain flexible qualities. It withstands temperatures as low as 50° below zero, and resists many fats, alkalies, acids and other solvents. Material also can be extruded into channels, lathe-cut or punched; and molded into almost any practical shape.

BOOSTS PLATING SPEEDS—Improved acid copper bath which makes possible plating speeds up to 0.001-inch in 10 to 15 minutes is reported by Dayton Bright Copper Co., Dayton, O. The method employs no cyanide or hot baths according to the company. Resulting smooth, dense deposits tend to fill out minor defects in the base metal, increasing corrosion resistance and eliminating buffing operations prior to nickel plating.

EVALUATES INFRA-RED STATUS—Comprehensive survey of the present state of knowledge on infra-red based on documents obtained abroad and now declassified by the government is included in a report currently offered by the Office of Technical Services, Washington. The bureau points out that in certain phases of infra-red experimentation and development of equipment, the Germans advanced much further during the war than technicians in this country. Great strides were made in perfecting infra-red radiators, filters, and photoelectric cells.

STANDARDIZES FITS — Besides interchangeability of screw thread parts, recent screw thread unification accord between United States, Canada and the United Kingdom also provides a further degree of interchangeability. It provides for identity of sizes, or interchangeability of use, of screw thread gages used in the different countries for controlling the limits of size of the threads. It also standardizes the grade or grades of fits between mating parts. (p. 54.)

ECONOMICAL JOINING — Considerable economies can be effected by combining hardening and brazing processes when joining steel parts, it is emphasized. Procedure is to assemble the steel members with the brazing material—usually brass—applied at the joint, and immerse the entire assembly in an activated cyanide bath for time required to produce the desired case depth. In one reported case, an automotive starter shaft and gear assembly, the bath used produces a case depth of 0.018-inch in 45 minutes. Brass applied at the joint melts during the carbonizing cycle, and a water quench following the salt bath treatment completes the brazing and hardening operation. (p. 56.)

CUTS OPERATOR DELAYS — An oxygen and acetylene gas distribution system recently worked into the operations of Calumet Iron & Supply Co., is reported to have stepped up scrap preparation considerably, besides improving cutting efficiency. Changing of cylinders by the operator and helper—a procedure which often meant a 1/2-hour delay—is no longer necessary. Operators now need only carry hose and blowpipes to the station outlet for a quick hookup. (p. 60.)

BOOSTS MELTING STOCK — Although home scrap — by-product of various processes for making iron and steel—is not quoted in trade papers, and is not susceptible to any of the techniques employed to increase the supply of purchased scrap, it does, however, figure prominently for calculating availability of melting stock. It is pointed out that in 1947, home scrap constituted 26.2 per cent of the charge of metallics in all types of furnaces in steel mills and foundries. (p. 76.)

Unification of

SCREW THREAD STANDARDS

To Facilitate Commerce Between Three Nations

American-British-Canadian agreement calls for 60-degree flank angles, rounded roots on external threads, flat crests on internal threads. Number of threads per inch for various series of thread diameters and dimensional tolerances are standardized

ACCORD on unification of the American and British standard systems of screw threads, signed on Nov. 18, 1948 at Washington, is expected to have far-reaching and beneficial consequences in facilitating commerce between the co-operating nations, Canada, the United Kingdom and the United States. In addition, the agreement represents a step toward the further development and extension of unifying standards in other fields of engineering practice.

The three principal characteristics of screw threads are angle and form of thread, pitch (combinations of diameter and number of threads per inch for the various thread series), and limiting dimensions (the manufacturing tolerances and allowances) for each grade of thread fit.

The British system, originated by Whitworth in 1845, is based on a thread angle of 55 degrees with a thread form having rounded crests and roots. The American system, developed by Sellers in 1864, has a thread angle of 60 degrees with a thread form having flat crests and roots. Number of threads per inch for the various series of thread diameters was the same in both systems, with the exception of the ½-inch coarse thread. Accurate fits between components having different thread angles were impossible. Moreover, tolerances and allowances varied in the two systems.

The present unification agreement provides a 60-degree angle and a rounded root for screw threads. Crests of the external thread may be flat, as preferred in American practice, or rounded, as preferred by the British. The number of threads per inch for the various series of thread diameters has been unified, and the limiting dimensions for three grades of fit have been agreed upon. Thus, interchangeability of screw thread parts, based on the accord, now becomes feasible.

Further Degree of Interchangeability — There is, however, a further degree of interchangeability attained by agreements on the numerical values for allowances and tolerances, thereby setting limits to the least and greatest amounts of looseness between mating parts. Such agreement provides for identity of sizes (or interchangeability of use) of screw thread gages used in the different countries for controlling the limits of size of the threads. It also standardizes the grade or grades of fits between mating parts.

The basic formula, from which allowances on all diameters and tolerances on pitch diameter are derived is: Tolerance (or allowance) = C (0.0015 $3\sqrt{D}+0.0015\sqrt{Le}+0.015 \quad 1.5\sqrt{p}$). C is a factor

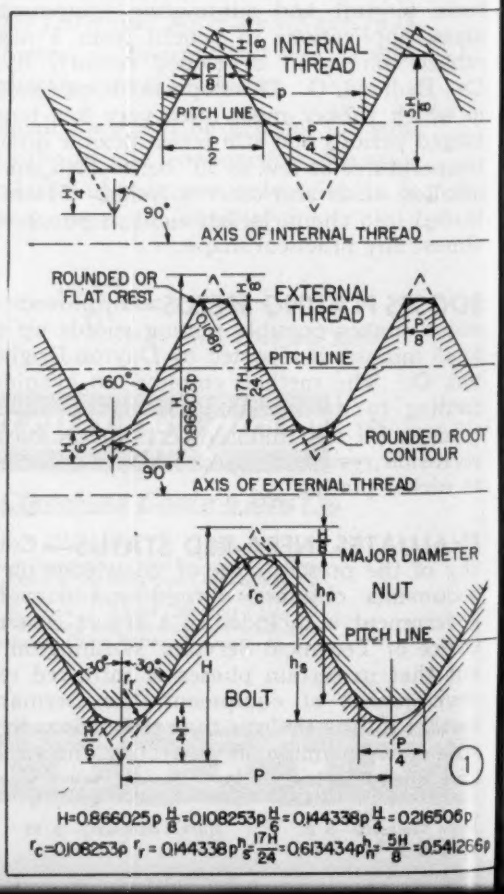


Fig. 1—Diagram showing American preferred form of internal thread (above) with flat crests and roots, unified external thread form (center) with rounded roots and either rounded or flat crests, and British preferred form (lower) with rounded root contour and flat crested internal thread

Fig. 2—British diagram showing tolerance zones and detailed clearance data for unified threads on class 1 and class 2 bolts and nuts

Fig. 3—American diagram showing critical dimensions which must be controlled in the manufacture of screw thread components. Classes of fit are distinguished from each other by permissible limits of looseness or tightness

Fig. 4—A specially-designed mounting is used at National Bureau of Standards in measuring taper angle of an internal thread. Taper thread ring gage to be tested is clamped to a hinged face plate set at an angle with the vertical plane equal to the nominal half-angle of taper of thread. Pitch line at bottom of ring is thus brought into the horizontal plane. A feeler arm with a ball contact point and an electrical indicator accurately measures deviations of pitch line from the horizontal

which differs for each allowance or tolerance for each class, D is the basic major diameter, Le is the length of engagement, and p is the pitch. The formula is based on the accuracy of present day threading practice, and is applicable to all reasonable combinations of diameter, pitch, and length of engagement.

Values of the factor C for allowances are as follows:

Class	Factor C
1A	0.450 or 0.300
2A	0.300
3A	0.000

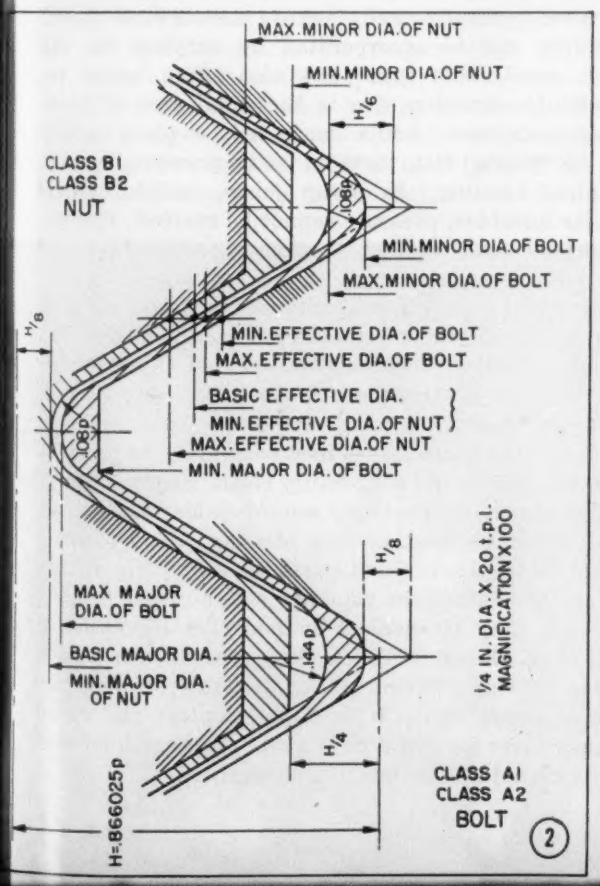
Values of the factor C for pitch diameter tolerances are as follows:

Class	Factor C
1A	1.500
1B	1.950
2A	1.000
2B	1.300
3A	0.750
3B	0.975

Relative difficulties of manufacture were provided for by making the value of the factor C 30 per cent greater for internal than for external threads of a given grade of fit.

A few details remain to be agreed upon. An editing subcommittee, consisting of representatives of the three nations, was appointed by Sectional Committee B1 on the standardization and unification of screw threads at its meeting held on Nov. 18, 1948. This subcommittee was authorized to resolve, within specified limitations, the differences which remain. Any agreements reached will be incorporated in the American standard without further formal action by the three governments.

Five Major Conferences—The unified screw thread standard was formulated in five major and several informal conferences of representatives of the countries concerned. In July 1918, the Congress of the United States authorized the appointment of the National Screw Thread Commission, with the director of the National Bureau of Standards as chairman, to investigate and promulgate standards for screw threads. One year later, and after a thorough study of screw thread practice in this country, the commission conferred with British and French engineers and manufacturers of screw thread products, for the purpose of discussing the (*Please turn to Page* 88)



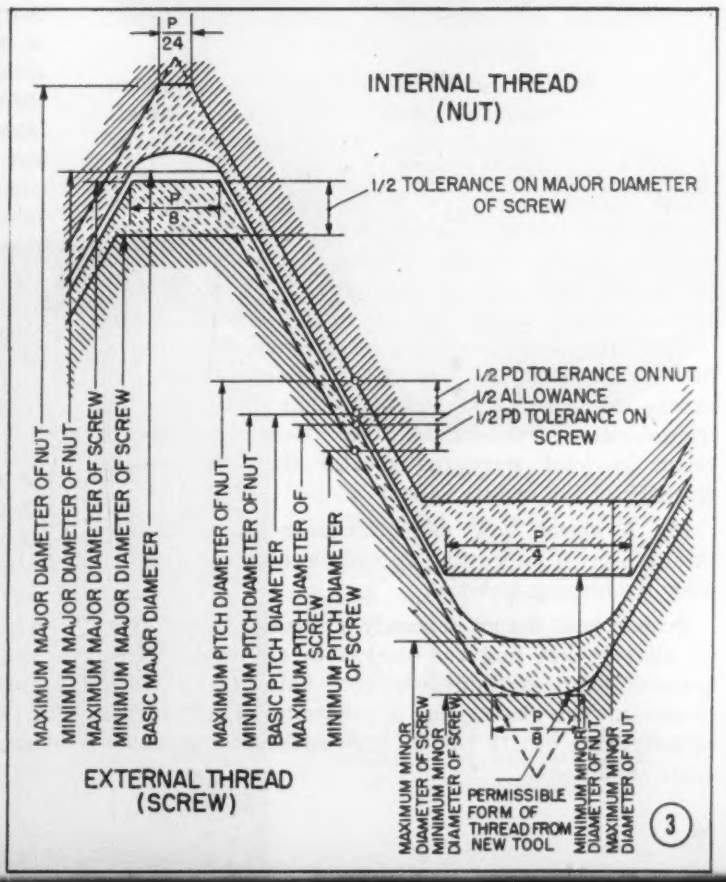


Fig. 1—Relation of joint thickness to tensile strength based upon butt joints of stainless steel to stainless steel

TRENDS IN Good Brazing

Processes for joining similar and dissimilar metals with copper, copper alloys and silver alloys are discussed in detail, with emphasis on alloys, methods of application, preparation of the joint, heating practice, flux removal and cleaning

BRAZING is the term applied to a process for joining similar or dissimilar metals with copper, copper alloys or silver alloys, which melt at a temperature appreciably below the melting temperature of the metals to be joined. Silver alloys cover the low temperature brazing range (1145 to 1600° F). Copper alloys cover the high temperature range (1600 to 1800° F). Copper brazing, usually identified as high temperature brazing is carried out at 2050° F.

A variety of brazing alloys, including their composition and melting range, is shown in the accompanying table. There are three general methods of brazing material application: 1. Feeding by hand, using material in wire or rod form; 2. preplacing material before heating in form of wire, powder, sheet, rings, washers or special forms and shapes; 3. pretinning, by which joint surfaces are dipped in molten brazing material.

Preparation of Joint—Clean and properly fitted joints are prerequisite to satisfactory brazing. Metals to be joined must fit close enough to permit the effective working of capillary action. It has been found that clearances of from 0.001 to 0.003-inch on flat and tubular work give the strongest and soundest joints in silver brazing. Usually 0.001 to 0.005-inch interference or at least metal to metal contact are standard press fits for copper brazing. When brazing alloys are preplaced in the form of shims, a little pressure on the joint while heating, forces out excess alloy and leaves a film that takes care of irregularities in the joint surface. Correct tolerances result in joint strengths greater than the tensile strength of the metals joined.

Fig. 1 shows how joint thickness affects tensile strength in an interesting specialized case using silver alloy for brazing material.

Proper joint design is mainly a question of the type of joint to use and the tolerances required. Three types of joints are in general use—butt, scarf and lap or shear. The shear joint is generally recommended, although the others can be used satisfactorily under some conditions.

Where double thickness of a shear joint is undesirable, a properly made butt joint can be used provided precautions are taken. The surfaces to be joined should be cut or machined square and even, so that when pressed together they will be in contact and provide the close clearance required to make a joint maximum strength.

Scarf joints are a special form of butt joint in which the surfaces to be joined are at angles of less than 90° to another surface of the parts to be joined. They are used in fabricating copper vessels and pipes, and for such work as joining band saws. They provide high strength, without making a joint thickness greater than that of the metals joined and are readily held in place by clamping while brazing.

Shear type joints are the most satisfactory and the most generally used, because any desired factor of safety can be incorporated by varying the lap shear area.[1] This type joint also offers better resistance to corrosion, due to the small area of brazing alloy exposed. Joints can be held in place readily and, in joining flat parts, a little pressure insures complete bonding. In shear joints, which include tubular members, pressure cannot be exerted. Correct clearances and capillary action are therefore the controlling factors.

Surfaces to be joined should be clean and all dirt, grease, oil and oxides removed. However, in the case of copper brazing, slight oxidation is not objectionable and the work is sometimes oxidized deliberately to increase capillarity. Cleaning can be done by mechanical or chemical methods. Sheet metal or tubing, as received from the mill, is not sufficiently clean. Emery cloth or similar abrasives effectively remove oxides and dirt. A fine file can be used, or shot blasting. Sand blasting should be avoided. Sand particles may cling to the surface and retard the capillary action of the brazing material. Any mechanical method that leaves a deposit of oil should be followed by a wash with a good grease solvent. Chemical cleaning differs with the type of metal used. If in doubt, contact the metal manufacturer for full details about cleaning solutions. Trichlorethylene is used extensively.

By RALPH MELANEY
Equitable Gas Co.
Pittsburgh

J. H. DOAK
Connecticut Light & Power Co.
Meriden, Conn.

STANTON T. OLINGER
Cincinnati Gas & Electric Co.
Cincinnati

g Practice

With few exceptions, such as joining copper to copper, or copper brazing of steels containing less than 5 per cent chromium, a flux is necessary to assure proper flow of the brazing alloy. There are, briefly, three functions a flux performs: (1) Protects metals from oxidizing while heating; (2) dissolves any oxides that form; (3) assists the flow of the brazing alloy.

"Common borax is a thin fluid at 1400° F and at this temperature unites quickly with the oxides of most metals. It contains approximately 47 per cent water of crystallization, which is driven off when heated causing the flux to bubble. Fused borax is, therefore, preferred by some workmen and if used as a paste, it should be mixed with alcohol because the fused borax quickly takes up the water and becomes common crystalline borax again.

"Boric acid is sometimes used alone as a flux, but generally in combination with borax or other salts. Combinations of borax and boric acid are extensively used, particularly with brazing alloys at a temperature above 1500° F. An addition of sodium or lithium fluoride to the fused borax helps in the flowing of silicon-copper alloys, and the addition of a bifluoride to the fused borax base helps in preventing the formation of nickel oxide in the copper alloys."[2] There are many satisfactorily-prepared commercial fluxes available. For silver alloy brazing (1145 to 1600° F) a flux in paste form which starts to melt and absorb oxides at 800 and at 1100° F is entirely fluid and active in dissolving all oxides should be used.

Methods of Heating—Several methods of heating, any one of which is satisfactory, can be used. Most widely used are torch and burner heating, furnace heating, induction, resistance and heating by dip methods.

Prior to 1941 torch heating was the most commonly used and most versatile method of heating. Fuels for torch heating are: Air and gas, oxygen and gas (manufactured or natural), oxyacetylene, and air and acetylene. Torches are easy to handle and operate. They are convenient, flexible and have a distinct advantage in ability to heat work uniformly. It is possible when using a torch to overcome the tendency of overheating one member of a joint in order to raise the temperature of the adjacent member sufficiently to cause good flow and wetting of the alloy. Many torch sizes are available, permitting a wide selection for particular applications. Double or multiple tipped torches are often used to speed up heating. Torches should always be adjusted to produce

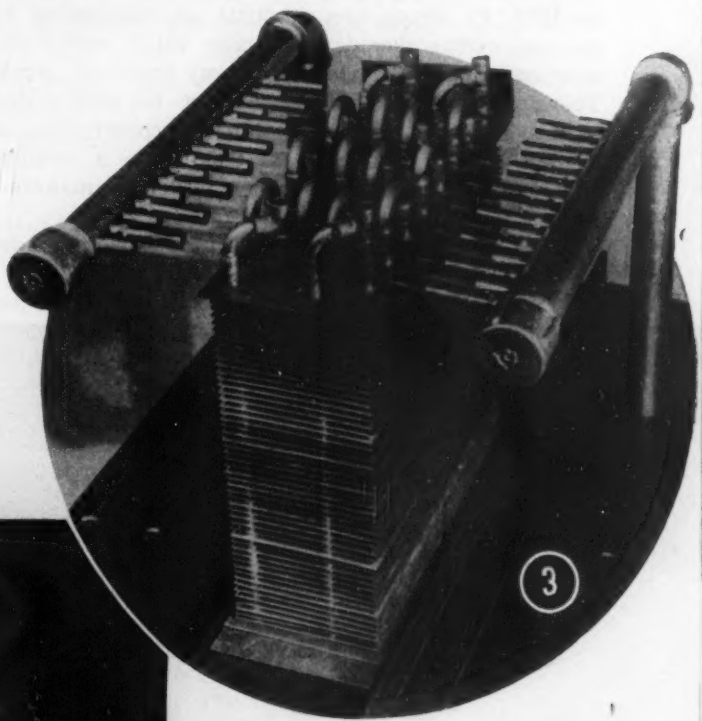


Fig. 2—Gas-radiant burners silver-brazing 20 silver washers and 10 heavy bronze nut blocks to tubular copper bus bar 6⅝-inch outside diameter. Temperature rise from cold to 1400° F; total time 5 minutes. Courtesy Selas Corp. of America

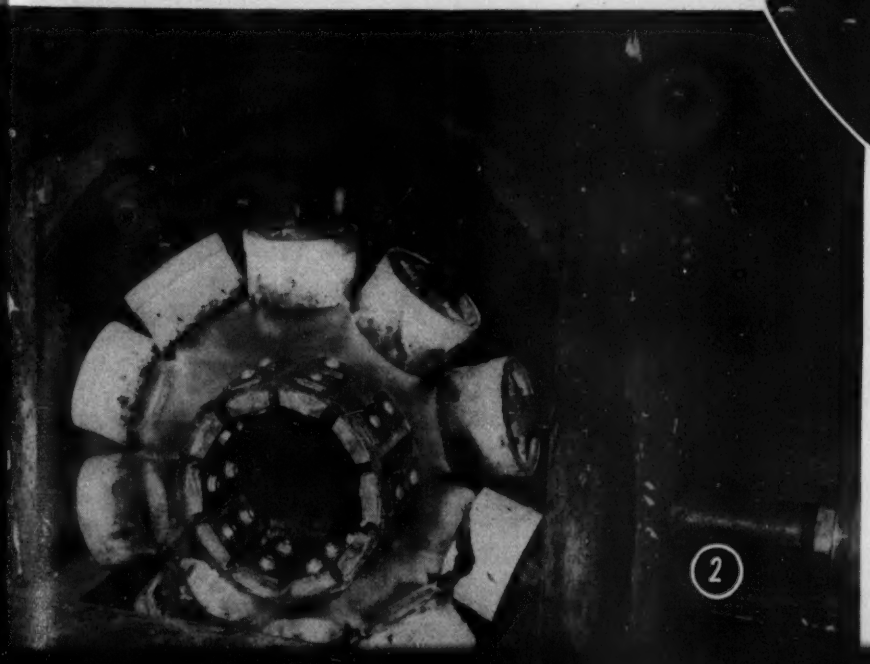


Fig. 3—Typical production gas brazing job involing special gas-air blower arrangements

a neutral to reducing flame. An oxidizing flame should never be used in brazing.

An intermediate process between hand torch brazing and fixed burner brazing is the use of a permanently fixed torch. In this semiautomatic control setup, the alloy is preplaced and the work fed by hand or mechanical means to the torch which may be single or multitipped.

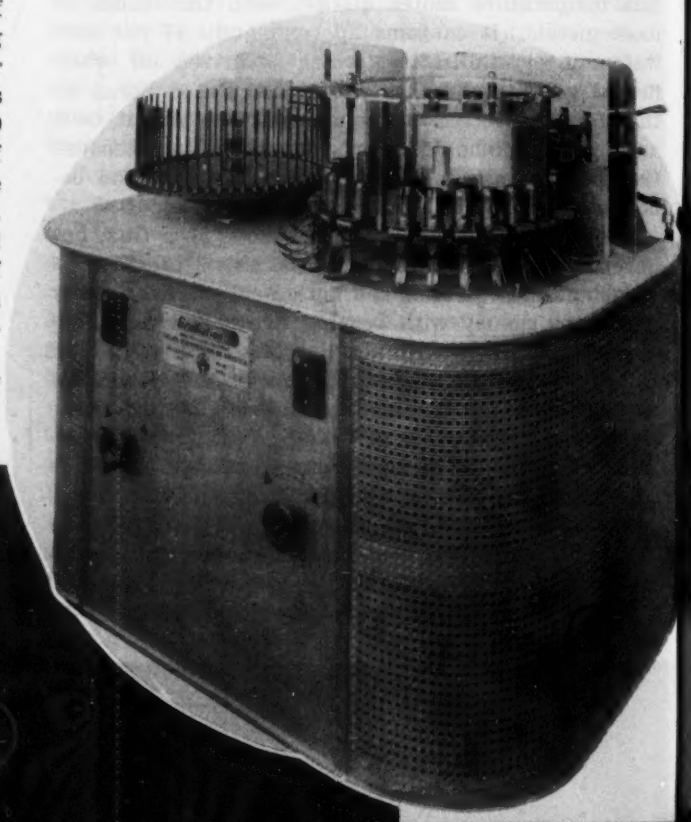
Fixed burner brazing for production work has been developed rapidly during the past 7 years. One or more burners permanently located at a fixed point, heat the joint or joints to be brazed after the work is moved into position on a turn table. Rackholding jigs are mounted on the turntable. One operator loads, unloads and turns the table which is supplied with indexing stops. In a four burner table, while four parts are being brazed, four are cooling and four are being loaded and unloaded. If a mechanical conveyor is used the work is similarly stopped between or under the burners for a predetermined length of time.

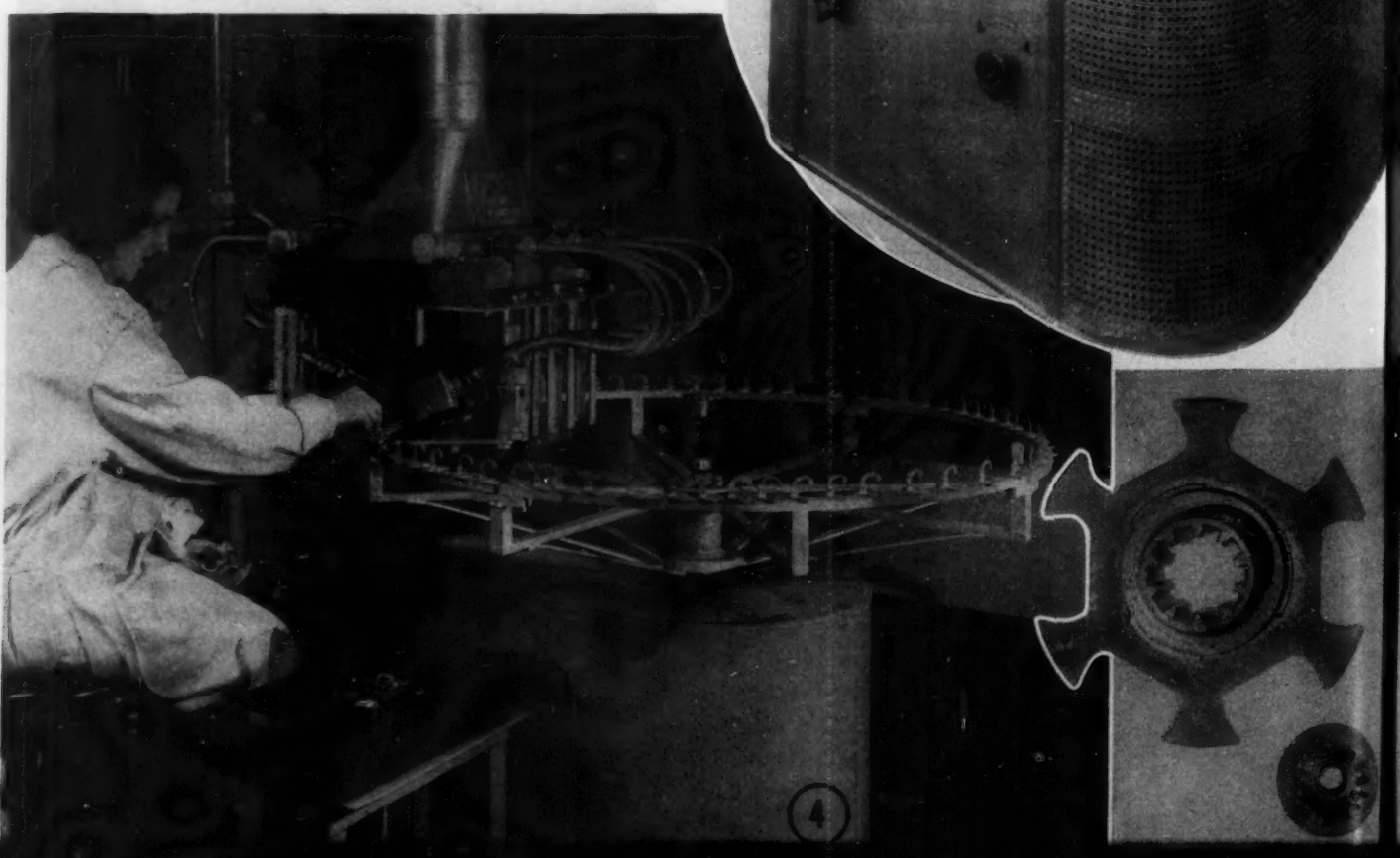
Furnace Heating—Furnace brazing can be divided into two classifications: (1) Copper and (2) silver and brass. Copper brazing furnaces present more of a design problem than do silver and brass brazing furnaces because the temperature used for copper brazing is about 2050° F whereas the temperatures used for silver and brass brazing range from 1200 to 1875° F. Since the products of combustion of gas are carbon dioxide and water vapor, which are injurious, they must be kept away from the work. Therefore, gas-fired furnaces must be constructed with a gas-tight muffle. Design and construction of such a muffle to operate at 2050° F is a problem now under consideration by most furnace manufacturers.

Most existing copper brazing furnaces make use of electrical heating elements in a heating chamber, which is supplied with a protective gas atmosphere generated in a separate unit. Silver and brass furnace brazing is usually carried out in gas-fired muffle furnaces, also supplied with a protective atmosphere.

General Type Furnaces—A bell type is a batch type furnace used for large and heavy work. Work is placed in the furnace and a gas tight cover or bell is placed over the work. The cover and hearth are usually sealed with sand. The furnaces are gas-fired around the cover and a protective atmosphere is piped into the bell. After the heating and cooling cycle is completed, the bell is removed and the work is unloaded. These furnaces can also be used for annealing and gas carburizing of steel parts.

Sizes of box type furnaces are rated by the productive capacity in pounds per hour. They are available in sizes from 50 to 250 pounds per hour. This type of furnace may be either gas-fired muffle type or electric type, both supplied with protective atmospheres from a generator. Gas-fired furnaces operate up to about 2400° F. They are usually used for ex-





perimental or nonproduction work. Installation and maintenance costs are low.

Belt conveyor type furnaces are used for high production of small assemblies. The belt may be loaded up to 7½ pounds per square foot. Furnace sizes range from 150 to 750 pounds per hour. Material is placed on the belt and passes into the heating chamber containing a protective atmosphere. Speed of the conveyor is regulated so that flow of the brazing material into the joints occurs near the end of the heating chamber. The assembly then passes into the water jacketed cooling chamber where it is cooled to below 300° F before it passes out of the furnace. The cooling chamber is usually four times as long as the heating chamber. Belt type furnaces are less flexible than the box or bell type furnaces, but are capable of a much higher rate of production. These furnaces are usually electrically heated for copper brazing and gas-fired for silver or brass brazing. Special furnaces, which incorporate quenching after heating, are also available.

Roller type furnaces are similar to belt furnaces in construction and application except that the work is placed on trays which pass through the furnace on water cooled power driven rolls. Capacity of the roller type furnace is generally higher than the belt furnace, ranging from 500 to 2000 pounds per hour. Heavier assemblies can be loaded on the trays than can be put on belt conveyors. Gas-fired radiant tube furnaces with silicon carbide rolls are being developed for copper brazing, but most copper brazing roll furnaces are electrically heated.

Pusher type furnaces are similar to the box furnace, but with a water cooled chamber incorporated into the unit. Parts are placed on trays and at regular intervals the trays are advanced through the furnace. These furnaces are small enough to eliminate some of the difficulties in construction of a high temperature muffle for gas-fired furnaces, and therefore, either gas-fired or electrically heated furnaces are available.

Incandescent Carbon Heating—This method permits rapid heating under pressure and is used to some extent. The parts to be joined are assembled between electrodes in which heat is generated and, by contact, transferred to the joint. Heat is easily controlled and confined to small areas. Brazing alloys can be preplaced or fed by hand. Pressure holds joint members together, eliminating a necessity for jigs. Push-button control gives accurate control of heat. Flow of the brazing alloy, when preplaced, indicates when the proper temperature has been reached. The joint should not be disturbed until the alloy has set. Portable equipment with electrodes held in tongs can be used for either shop or field work.

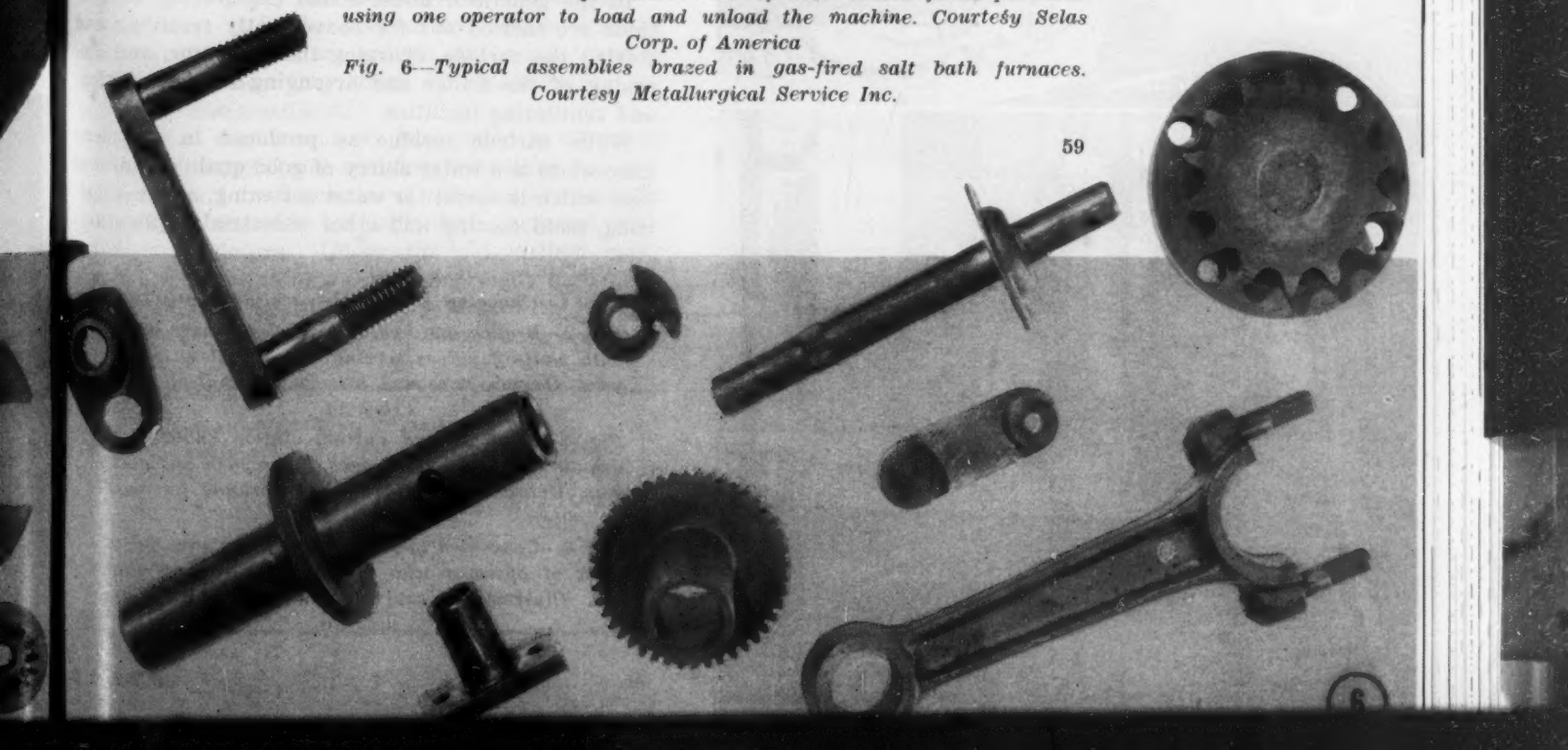
Electrical heating can also be applied by the resistance brazing method in which heat is obtained—from resistance formed between the metal to be joined and an electrode—between two electrodes or from the resistance of the brazing alloy itself. This method is adapted to the brazing of seams with the brazing alloy preplaced. The equipment is similar in operation to a spot welder, but has been adapted to the low heat input that is required for low temperature brazing.

Induction heating (*Please turn to Page* 90)

Fig. 4—*Silver-soldering coat hook assemblies made from two brass stampings. Piece is assembled, silver solder rings put in place, fluxed and placed on trays. Machine operator places assemblies on the turntable ring. Pieces pass through burner zone, are cooled and drop off into basket. After acid dip and rinse they are chrome-plated. Production is* 2000 *pieces per hour. Courtesy Gas Appliance Service Inc.*

Fig. 5—*Gradiation machine for aluminum brazing refrigerator dryer assemblies at a total production rate of* 1000 *brazed joints per hour using one operator to load and unload the machine. Courtesy Selas Corp. of America*

Fig. 6—*Typical assemblies brazed in gas-fired salt bath furnaces. Courtesy Metallurgical Service Inc.*

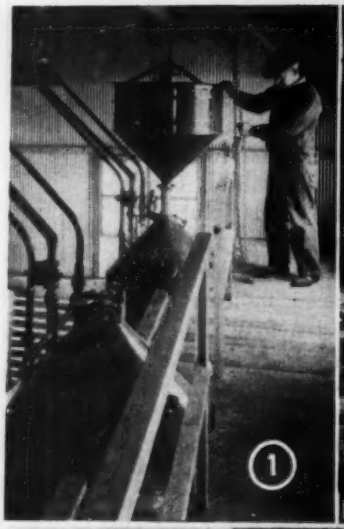


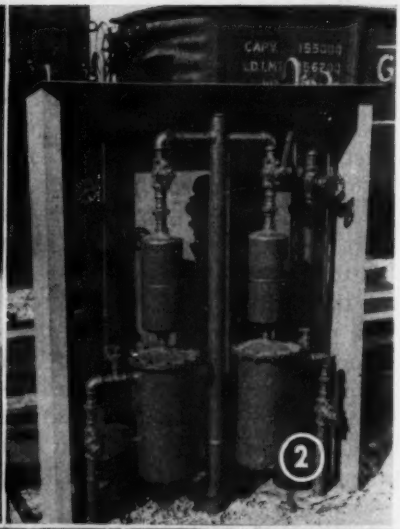
OXYGEN AND ACETYLENE

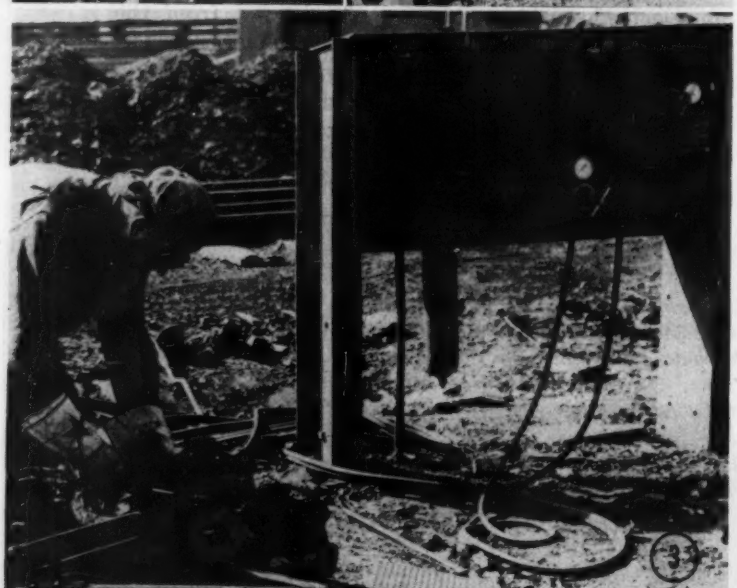
Gas Distributing

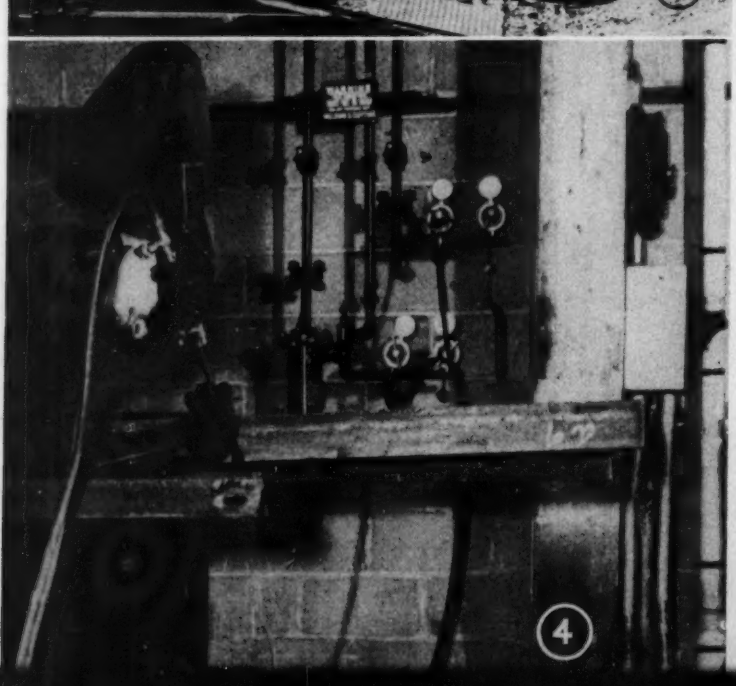
. . . used effectively in large

By JOHN S. GRAY
Calumet Iron & Supply Co.
East Chicago, Ind.









EFFICIENCY and economy are just as important to the scrap preparation business as to the metalworking industry. About a year ago, the management of Calumet Iron and Supply Co. decided to improve the manner in which oxygen and acetylene were being distributed in the yard and in the rapidly expanding fabrication building.

Although central points were established to receive oxygen and acetylene cylinders, as well as strategic locations to distribute these cylinders to the 9-acre yard, much time was wasted in handling cylinders and in connecting and disconnecting oxyacetylene apparatus. Also, hose lengths between torches and cylinders were much too long and hazards arose from this as well as from having many cylinders scattered around the yard.

On going over the problem of gas distribution with the supplier, The Linde Air Products Co., New York, plans were outlined to eliminate cylinder handling and to provide large consumption volume of oxygen and acetylene at fixed locations. Consumption of oxygen justified installation of a Cascade oxygen unit. For acetylene supply, a modern acetylene generator house was constructed. Liberal-sized underground lines were installed to serve well-placed, carefully protected outlets that would be numerous enough practically to eliminate the need for cylinders. Safety devices were set up to help prevent costly accidents to operators and equipment.

In the generator house sound engineering suggestions are carried out for conveniently receiving and storing the carbide, charging the generator, and disposing of the sludge and arranging heating, piping, and ventilating facilities.

While carbide residue as produced in acetylene generators is a water slurry of good quality hydrated lime which is useful for water softening, acid neutralizing, mold coating and other industrial applications

Fig. 1—Charging one of the acetylene generators

Fig. 2—Branch line hydraulic back-pressure devices with shut-off valves serving two acetylene lines in yard. Oxygen lines and branch line shut-off valves behind

Fig. 3—Typical yard cutting station showing hydraulic and two outlets each for oxygen and acetylene. Guards are painted bright orange for maximum visibility

Fig. 4—Conveniently-placed outlets are seen on wall back of operator who is making a manual flame cut. Illustrations courtesy The Linde Air Products Co.

System

large scrap preparation yard

existing in many plants, and for use as whitewash and fertilizer in rural areas, there were no potential uses of this nature in the plant or in nearby industrial plants. The generator building is heated by steam supplied by an underground line from the main building. Generated acetylene costs about one-half the price of acetylene delivered in cylinders. Additional savings are obtained because cylinder handling is eliminated. The nine-tube oxygen unit holds approximately 40,000 cubic feet of oxygen.

Piping system consists of seamless tubing with practically all joints oxyacetylene welded. Amounts and diameters are shown in the accompanying table. In addition, 420 feet of ¾-inch galvanized piping are used for back pressure relief vent lines in the acetylene piping system.

In the acetylene system there are three main-line hydraulic back-pressure valves. Two of these are for the two main branch lines to the outside stations, and one is for the acetylene line in the fabrication building. There are 29 acetylene station hydraulics in the system. Most locations have two outlets for acetylene and two for oxygen. The entire system has 52 oxygen station valves and the same number of acetylene valves. Oxweld, acetylene and oxygen station regulators are standard equipment at the station outlets.

Oxygen main line pressure is maintained at 100 pounds per square inch by the automatic regulating device which is part of the oxygen unit. This pressure is reduced to suit the work being done by the cutter's adjustment of the regulators at his working station. Acetylene line pressure is 8 pounds per square inch. It is also noteworthy that oxygen and acetylene line regulators are not only much lower in cost than cylinder regulators but maintenance expenses are also much less.

Important economies have been found in this close control of oxygen and acetylene pressures as compared to our former practice of allowing each cutting operator to regulate his individual pressures with cylinder regulators. Under the old method many cutters were wastefully using abnormally high pressures. By use of the piping system with its conveniently located stations, lengths of hose are much shorter. This permits utilization of lower pressures. With shorter hose lengths, damage to hose from routine wear and falling scrap is lessened. Damaged hose means delays for making splices which, in turn, are often the source of leaks. Important savings through reduction in leakage result.

Types of work performed with the gases piped in the system are illustrated. Scrap preparation is performed efficiently by the cutting operators who need only carry hose and blowpipes to the station outlet for a quick, easy hook-up. The operator's effectiveness is increased through not changing cylinders, a procedure which often meant a ½-hour delay to the operator and helper. More uniform cutting operations mean more efficient work by the yard cranes used to lift scrap cut free by the blowpipes. Oxygen and acetylene are supplied at constant pressures; cutting is faster, and from the standpoint of size of scrap, is of better quality.

Calumet Iron & Supply Co. operates a moderate sized steel fabrication plant in connection with the scrap yard where acetylene and oxygen play an important part in cutting, welding, and heating. It is just as important to have outlets piped for oxygen and acetylene in the fabrication building, as it is to have outlets for compressed air and electricity. Properly located, such oxyacetylene station outlets save valuable space, give more efficient oxyacetylene operation, and help make a safer shop.

Prior to the installation of the oxyacetylene piping system, laborers with trucks handled hundreds of cylinders per month. With the installation of the piped distribution systems all such handling is eliminated. Under the new and efficient methods of distributing oxygen and acetylene, all of the work is performed by the crane maintenance men. Their duties include the following:

1. Receive carbide at generator house, and charge generators.
2. Arrange for carbide sludge removal.
3. Inspect water level in line and station hydraulics at regular intervals, and inspect station valves for leaks at regular intervals.
4. Check pressure of Cascade oxygen unit once a day.
5. In winter, apply antifreeze to hydraulics subject to freezing.

Piping system was planned for future expansion. Although this meant extra expenditure for pipe larger than necessary in the system, we knew that oversize pipe was a fraction of the total cost of installation. The system had been in use only 6 months when plans were made to purchase adjoining acreage for yard expansion. Now it will be relatively inexpensive to add new piping to reach this area.

Based on experience so far, cost of installing piping and acetylene generating facilities will be paid for in about 2 years through savings in cylinder handling, lower costs of gases, and savings in residual gases. With almost complete assurance that these savings will continue for many years, we are prepared to face rising labor costs and periods of less favorable markets with far greater optimism.

SEAMLESS TUBING IN PIPING SYSTEM

Acetylene		Oxygen	
Number of Feet	Diameter (Inch)	Number of Feet	Diameter (Inch)
600	2½	320	3
960	2	340	2½
240	1½	960	2
340	1¼	240	1½
180	1	240	1¼
340	¾	240	1
		420	¾

SELECTIVE HARDENING
automobile camshafts

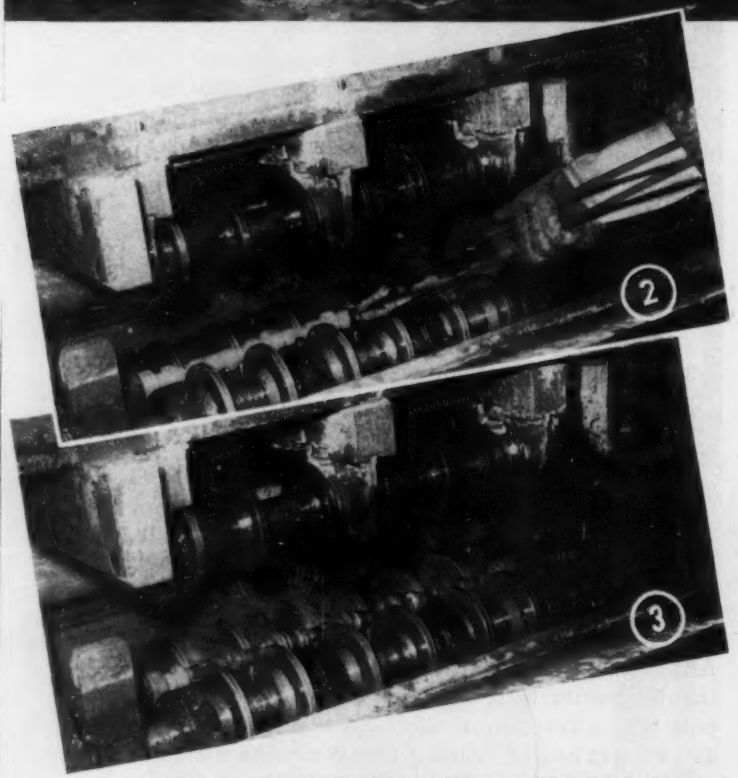


Fig. 1.—Gas carburizing furnace with a load of camshafts entering sealed chamber before being moved into the furnace proper. Cast alloy caps may be seen covering the sprocket ends of shafts in left foreground

Fig. 2—Heated camshaft here is placed in quenching fixture which holds the part firmly and rotates it in the quenching solution

Fig. 3—As shaft is rotated in the quench, an air blast is directed over the capped end to prevent hardening action on that area. Air hose is distinguishable at the right of the fixture

CAMSHAFTS of SAE 1020 steel for 6 and 8-cylinder Pontiac engines are gas carburized for 12 hours to produce a case of 0.090-inch, following which they are heat treated at 1500° F, quenched in a fixture and tempered. However, in this sequence of heat treating it is necessary to keep the sprocket end onto which the camshaft gear is fitted relatively soft in comparison with the file-hard cam surfaces. This end is threaded and has a keyway to secure the camshaft gear tightly and must be held to 25-30 rockwell C in comparison with 60 rockwell C on the balance of the shaft.

To accomplish the selective hardening, a cast 35-15 nickel-chrome alloy steel cap is screwed over the sprocket end of each shaft before it enters the carburizing furnace. After the shafts are moved through the carburizing operation, machined, and through the first phase of the subsequent heat treatment, they are transferred one at a time to a special type of quenching machine equipped with a fixture which holds the shaft firmly and lowers automatically into the quenching solution. At the sprocket end is an auxiliary fixture which is arranged to direct air pressure over the protective cap to avoid any quenching effect on this portion. The shafts then are tempered and are ready for finish cutting of the keyway which is cut undersize before carburizing, and final grinding.

Sprocket gears are of cast iron, and those for the 6-cylinder engine are heated in cyanide for 35 minutes at 1600° F after normalizing and machining to give 40 rockwell C hardness on the teeth. The gears are oil quenched and tempered at 500° F for 1 hour following the cyanide treatment. The thin cyanide case serves to minimize wear.

Automatic Cycling

Permits Rapid Turning and Boring of Sleeve Bearings

Arrangements for easy loading and unloading of work, and co-ordinated operations, cut "idle" time to minimum and allow one operator to run "battery" of two lathes

By GUY HUBBARD
Machine Tool Editor, STEEL

CAREFUL study of problems involved in getting work in and out of the machines—as well as co-ordination of cutting operations under automatic cycle control—have enabled production engineers at Monarch Machine Tool Co., Sidney, O., to attain extraordinarily high output of repetitive work in machine tools which basically are of engine lathe type.

A case in point is Mona-Matics setup for turning and boring bronze and cast iron sleeve bearings. This setup involves two machines, one for boring and one for turning. Because of the ease of chucking and unchucking the parts, and the fact that once started the machines are self-actuating, one operator easily handles both machines in this battery.

Fig. 1 is a closeup action photograph of the machine which is setup for boring, while Fig. 2 is an overall view of the machine for turning. In Fig. 1 the tools have completed their cycle and retracted. The operator is pressing the foot treadle (visible in Fig. 2) which actuates the air chuck from which he is removing a finish bored bearing.

How it Operates—The complete schedule of operations under this so-called R-F cycle briefly is as follows: Operator inserts a bearing casting in the pedal controlled chuck, then pushes the "cycle-start" button on the control box visible at his right in both photographs. This starts the work rotating and the front carriage with its two-station air-indexed boring bar comes up at rapid traverse. Just as it reaches the

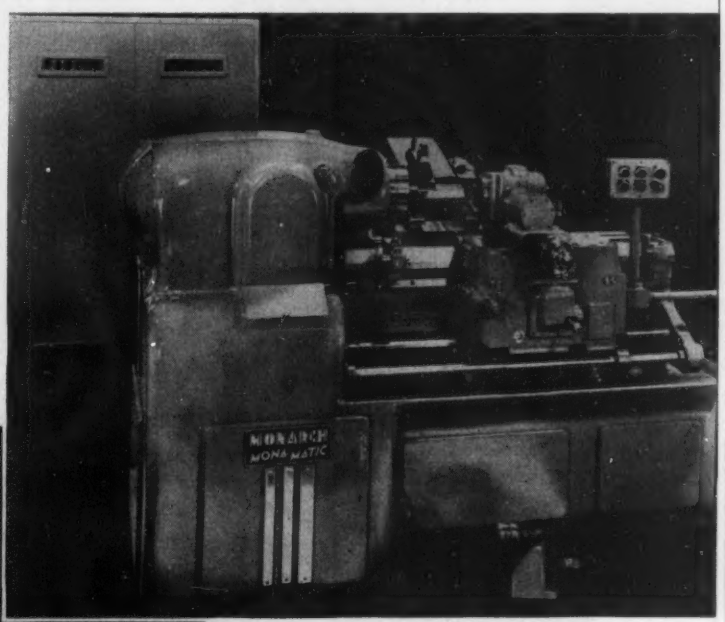
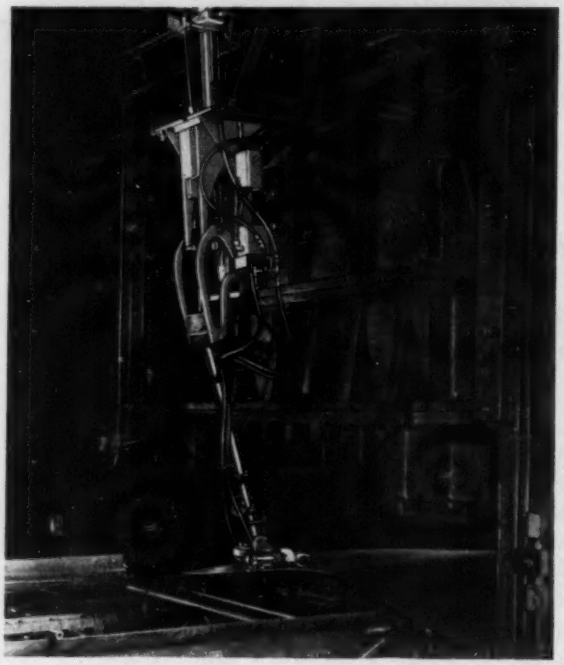
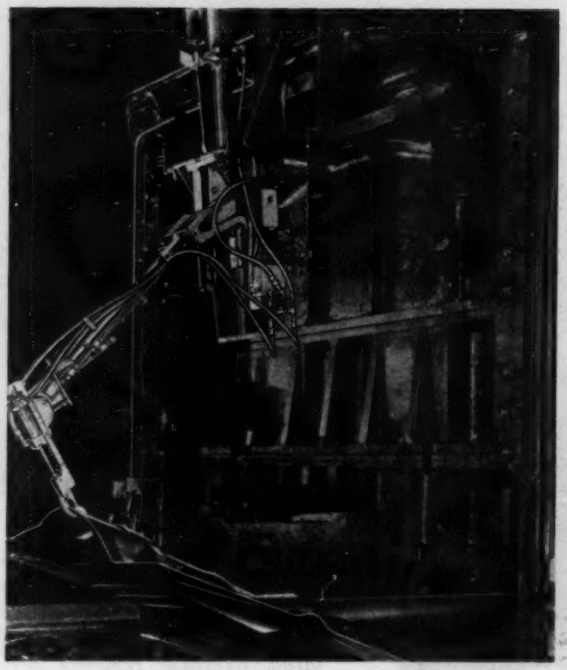


Fig. 1—(left)—At completion of first operation, comprising automatic boring and facing one end, in Monarch Mona-Matic lathe, operator removes bearing by opening jaws of air chuck by means of foot-operated valve

Fig. 2—(above)—Second operation machine in two-lathe battery turns bearing and faces other end. Air-operated expanding mandrel holds work on finished bore while automatic cycle is carried through



DOES TWO-MAN JOB: New press unloader shown above ready to grasp the work following completion of press stroke is reported to increase production as much as 50 per cent and improve plant safety practices. Developed by Sahlin Engineering Co., Birmingham, Mich., it is an entirely self-contained unit that can be installed on practically all types of presses to do the job of two men . . .



. . . . Called the "iron hand", it is shown here in action—removing the work, in this case the floor pan of an automobile. Unit can be arranged to lift the panel vertically upward for any desired distance before swinging out or turn the work over. As its operation is independent of the press, the unloader can be timed to remove the panel during any portion of the upward stroke. The "hand" was designed by Harry Sahlin, former master mechanic of Fisher Body Division, General Motors, and more recently general master mechanic of E. W. Bliss Co.

work it shifts to roughing feed, whereupon it goes through with a roughing cut.

Then the bar indexes to bring a finishing boring tool into position. The spindle speed increases but the carriage speed is reduced and the finish boring cut is taken. In the meantime the rear carriage has moved in, taken a facing cut and has retracted to its starting position. Upon completion of the finish boring cut, the boring bar is withdrawn at rapid traverse, the spindle stops, the boring bar re-indexes ready for the next cycle and the operator removes the finish bored bearing as in Fig. 1.

Uses Expanding Arbor—In the second machine of the battery—the one depicted in Fig. 2—turning and facing of the other end of the bearing are accomplished in a similar R-F (roughing-and-finishing) cycle. In this setup—instead of a chuck—an air-operated expanding arbor, likewise actuated by pedal valve, holds the work on its finished bore. An air-indexed, dual station turning head takes the place of the boring head used in the other machine. Otherwise the setup is practically the same, as also is its operation.

Under production conditions a bronze bearing, 3½ inches outside diameter, 3 inches bore, 4½ inches long, is machined complete in floor-to-floor time of 71 seconds by this two machine, automatic cycling battery of lathes. Rough and finish boring and facing one end takes only 68 seconds but as the longer period of 71 seconds for turning and facing sets the pace for the battery, that is the time per piece. Concentricity of bore with outside diameter is held within 0.0005-inch.

Setup requires only 15 or 20 minutes, making short run work practical under automatic cycling. Incidentally, the machines readily can be tooled for a wide variety of sizes and kinds of work. Therefore a dual battery such as here described can be retooled, or "broken up" as single units, to deal with entirely different and more complicated jobs in ways equally as effective as in the case of the bearing machining herein described.

British Honing Tools Distributed Here

Alexander Ball line of honing tools, built by George Alexander Machinery Ltd. of Great Britain, is being distributed in this country by C. Allen Fulmer Co., Cincinnati. Said to feature fast stock removal and extreme accuracy in their honing operations, the machines now being introduced make it possible for even the small shop to utilize honing to advantage as a production stock removing process.

It is said that some of the foreign users of the tools hone the rough cast inside diameter of a cylinder directly to size without a previous boring operation. On many sizes of tools, flanges in the honing head are removable and additional flanges are supplied for replacement in the honing head that increase the diameter of the tool by 1 or 3-inch increments. The same stone holders and basic honing tool are used with all the proper flange sizes. Tools are offered in sizes from ½ to 50 inches in diameter and in types to finish open bores, ported cylinders or blind holes, all being equipped with diametrical sizing stops.

ALL STAINLESS AND HEAT RESISTING ARC WELDING ELECTRODES STOCKED. ALSO ELECTRODES TO MEET SPECIFIC ANALYSES. COMPLETE FACILITIES FOR COLD DRAWING ROLLING PICKLING AND ANNEALING

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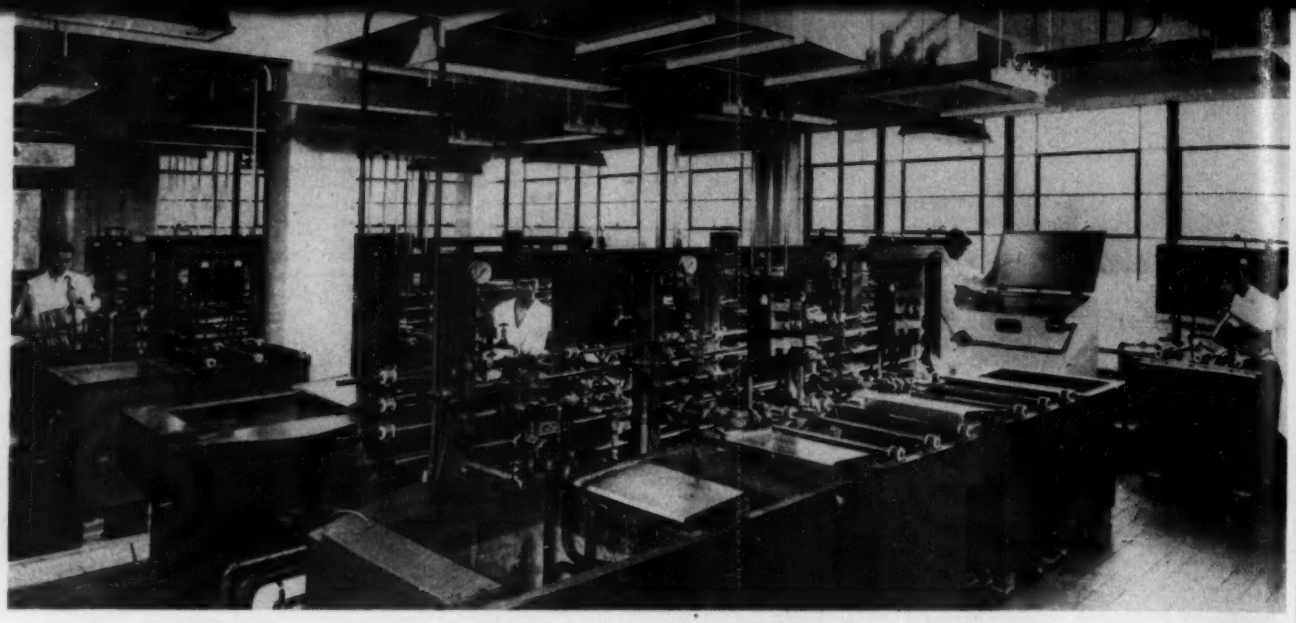


ELECTROCHEMICAL LABORATORY

. . . devoted to experimental and service work in electroplating and polishing

EXPERIMENTAL and service work in the electroplating and polishing field is now under way at the recently-dedicated Hanson-Van Winkle-Munning Co. electrochemical laboratory at Matawan, N. J. Heart of the three-story, specially-designed building, with its 15,000 square feet of floor space, is the plating room on the first floor.

Equipment installed here includes complete apparatus for experimental and sample cleaning, pickling, plating and anodizing. The plating room, 42 x 63 feet, is the culmination of many years of intensive planning. Virtually every known device for scientific operation of electroplating solutions is utilized here. Efficiency, advanced instrument control, comfort and safety of technicians, accessibility of services and most important of all, sufficient flexibility in the arrangement of apparatus to permit alterations to meet changing needs, were major considerations in the setup.

Floor is covered with acid-proof bricks pitched in various directions to the drainage troughs under each line of tanks. Silicon-iron waste lines carry drainage to an outside treatment plant. Overhead, vapor-proof fluorescent fixtures provide uniform lighting for night work, while continuous window areas on two sides combine with highly reflective walls and ceilings to eliminate the need for artificial light during normal daylight hours.

A complete air change can be made in the plating room every 1-1/2 minutes, if desired, through ducts that provide cooled air in the summer and warmed air in the winter. Air to replace that drawn out is furnished through a louvered duct from the outside. Three exhaust blowers and one intake fan keep the room under slight pressure, thus keeping out dust and preventing contamination of plating solutions. Current is supplied by two direct current motor generator sets, one with a 1500-ampere capacity at 6 to 12 volts and the other a 500 ampere, 40-volt unit. Portable low-voltage rectifiers are available for auxiliary direct current.

A large analytical laboratory on

Fig. 1—(above)—Partial view of plating room showing standard process tanks and equipment for cleaning, pickling and plating

Fig. 2—(below)—Section of main research laboratory room, with modern equipment and facilities for electrochemical research

the second floor is used primarily for customers' service, involving the analysis of plating solutions and investigating difficulties encountered in the application of electrodeposits. The research laboratory is devoted to the investigation of new products and processes and fundamental studies of problems related to metal finishing. Both departments are equipped with double fume hoods with built in flush-mounted, 6 kilowatt hot plates, Diggin electroplating control tables and provisions for replacing air withdrawn by hoods with forced, filtered, fresh air. Additional rooms on the floor house a metallographic laboratory, dark room, balance room, and offices.

In the right wing of the second floor is a laboratory for investigating, developing and testing polishing and buffing compounds and materials. A feature of this laboratory is a custom-built, precision buffing machine used for exact valuation of buffing and coloring compositions, as well as for basic research in the field. An intercommunication system closely links the laboratory's 33 rooms.

Aluminum Alloys, Solder Covered in Specifications

New tentative specifications and test methods approved by the administrative committee on standards of the American Society for Testing Materials, Philadelphia, include a revision in the specifications for aluminum base sand castings alloys and a change and additions in the specifications for soft solder metal and bearing alloys. The aluminum base alloy change concerns alloy SC8 which now includes two slightly different commercial alloys. The revisions separates two by establishing alloy SC9.

Revisions in alloys CS5 and SC42 are based on conclusion that increasing the permisible zinc content is not undesirable from a use viewpoint and is desirable economically. Table III is added to the permanent mold specifications, it giving typical yield strengths.

Two additional alloys have been added to the group of solder metals and are designated at 5A and 2A, respectively, with the desired tin at 5 and 2 per cent, maximum antimony at 0.12 per cent and nominal lead at 95 and 98 per cent, respectively. With these two, there are 30 grades covered in the specification.

—o—

Rules and conditions of the annual engineering undergraduate award and scholarship program for 1948-49, sponsored by the James F. Lincoln Arc Welding Foundation, are covered in a booklet published by that organization, located in Cleveland. Closing date of entries is April 1, 1949.

—o—

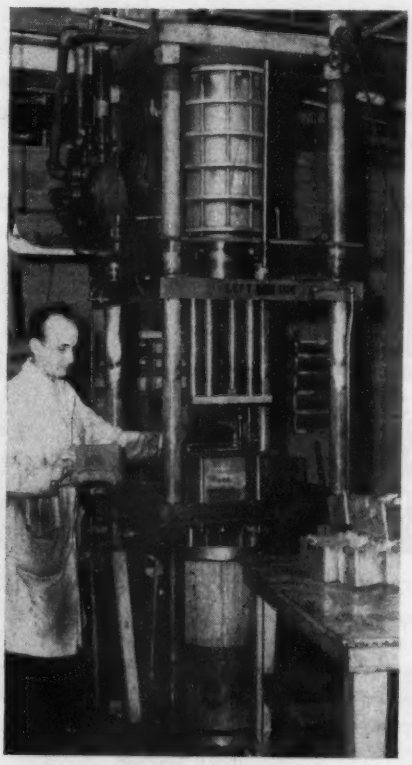
American Buff Co., Chicago, is making available its "Golden Book of Buffs and Polishing Wheels", a catalog of the company's products as well as an informative text on the construction, quality and application of buffs and wheels and results accruing from their usage.

DEEP DRAWING LUBRICANT

. . . facilitates production of steel parts

BY means of a new-type lubricant for sheet stock, Zierold Mfg. Co., Burbank, Calif., is now able to produce unprecedentedly-deep draws in steel with single-stage dies and no intermediate annealing operations. Lubricant is fundamentally a petroleum compound, in which waxes or other ingredients are combined to permit the formation of friction-resistant films on sheet stock. In appearance, it differs from other sheet lubricants to the extent that it is extremely viscous.

It is applied to both sides of sheet blanks for drawing work, and its function is to completely insulate the sheet surfaces against contact with the die surfaces that are closed thereon, thus preventing dissipation of metallic cold-flow properties by frictional stresses. Because frictional stresses on the sheet itself are minimized, the optimum flow of steel stock is concentrated along the contours of the male die unit so that resultant work hardening will be almost exclusively due to tensional stresses allowing each draw to proceed until the theoretical flow limit of the stock is attained.



This 150-ton hydraulic press is used to make the most difficult draws. Die marks on parts do not extend through lubricant on the sheet metal surfaces

In some instances, the consequent draws have almost doubled depths that could have been anticipated if comparable tooling had been utilized in connection with standard sheet lubricants. For example, small box-like containers with depths ranging up to 9 inches have been fabricated with no more than a single press operation for each.

Efficiency of the new lubricant is indicated by the fact that on many of the Zierold-drawn articles, there is no evidence of die marking to denote penetration of die surfaces through the lubricational film on the sheet stock. Except for their dimensional specifications, dies employed in connection with the new lubricant are of standard production designs. A 150-ton hydraulic press is used on the more difficult types of work.

Because of its petroleum base, the lubricant can be readily removed from drawn metal surfaces with ordinary degreasing equipment. Among the sheet-steel parts that have been efficiently manufactured, using the lubricant, are heavy-duty bedlegs, symmetrical molds for tile-like concrete roofing blocks, one-unit stove tops, radio cabinets or containers etc.

STEEL

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FIRST STEP . . . After studying your grinding problem in your plant, the Sterling engineer brings his findings to the Sterling Technical Director.

SECOND STEP . . . The Sterling Technical Director, after analysis and tests, submits your grinding problem to the Sterling Committee for group recommendation.

THIRD STEP . . . Back in the Sterling laboratory, the Committee's recommendations are analyzed and take form in special test mixtures of grain and bond.

FOURTH STEP . . . The resulting wheel on your machine, built to the specifications of your job, proves the wisdom and economy of Sterling's Research and Development Program.

THE STERLING GRINDING WHEEL DIVISION

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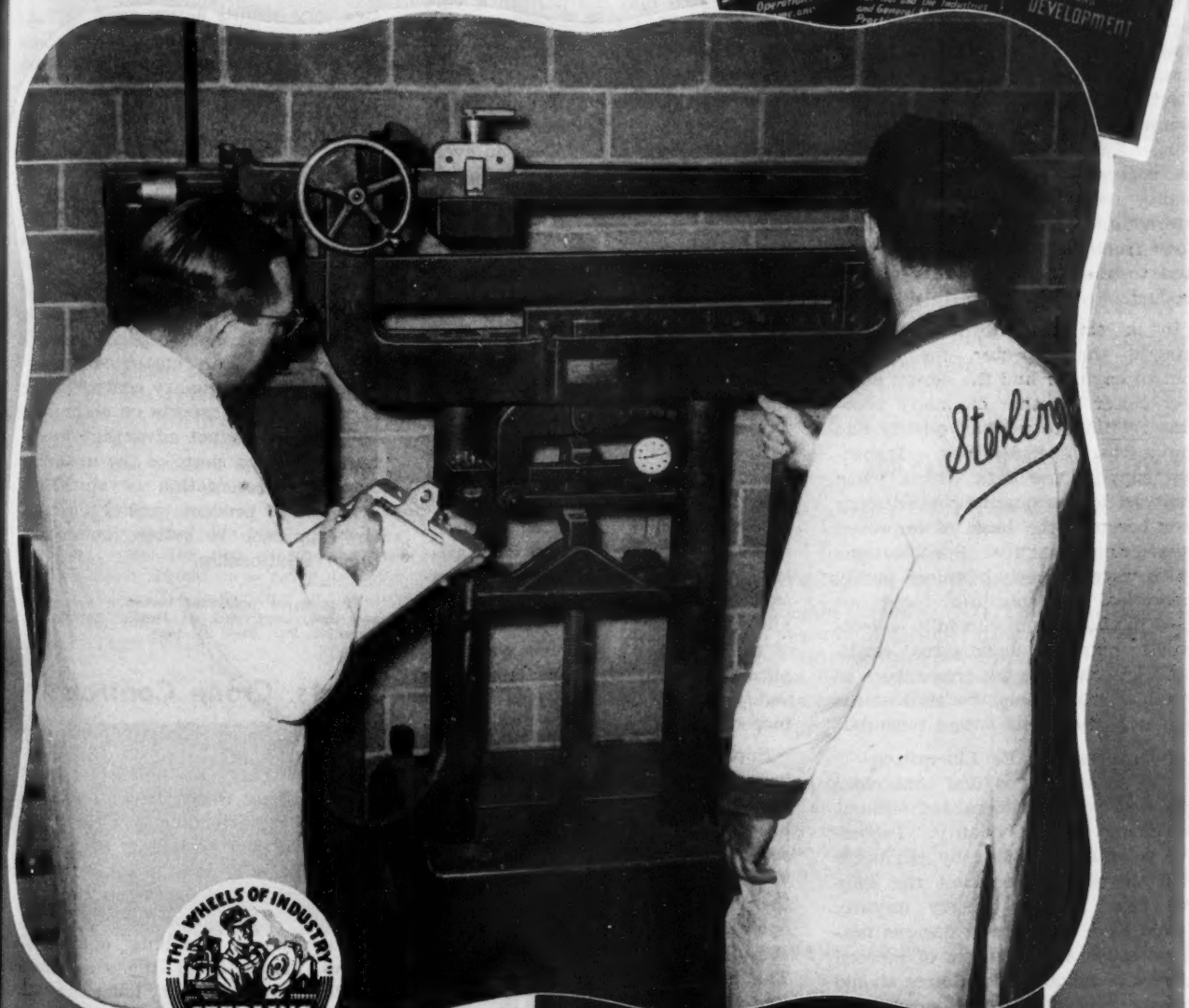

"THE WHEELS OF INDUSTRY"
STERLING
GRINDING WHEELS

AN EXAMPLE OF STERLING'S PRODUCT DEVELOPMENT TECHNIQUE

In the view above, Sterling technicians are testing grinding wheel structures for tensile strength as well as modulus of rupture, elasticity and resiliency.

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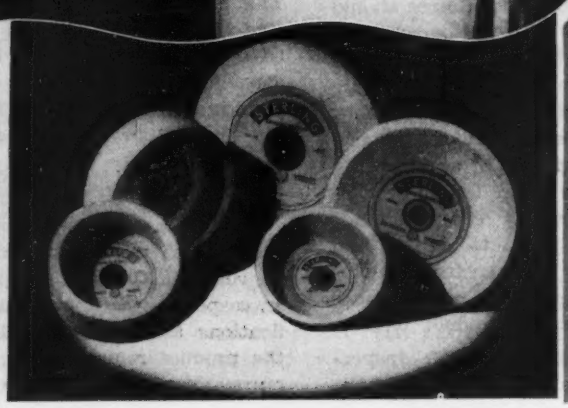


How Quality Control Techniques

. . . influence design, specifications, purchasing and inspection of parts

THROUGH application of statistical techniques to industrial operations and processes the quality control engineer can today offer great benefits to industry and society according to Robert S. Inglis, superintendent, quality control and inspection division, Philadelphia Works, General Electric Co. It has opened up new avenues for closer functional teamwork in industrial organizations. To be successful, control of product quality must have the co-operative interest and active effort of all functions from the inception of the design to the final inspection of the product.

It is this teamwork that has brought the inspector, the quality control engineer and the design engineer closer together on many problems relating to product quality and engineering specifications. Inspection supplies the data which, when analyzed by the quality control engineer becomes the basis of improved engineering practice. Specifications which were formerly based on purely theoretical concepts are being revised in the light of carefully collected data obtained under actual conditions, and showing the true nature of variables which must be allowed for in specifications and design formulas.

Tolerances Can Be Liberalized—It is not uncommon to find that close tolerances can be liberalized without sacrificing product quality. Protective tolerances applied by engineers with the expectation that the shop will take a little liberty anyway should have no place in designs produced under the influence of modern control techniques. Tolerances should then be applied with full understanding of the variables encountered in production. Design engineers are seeking the guidance of the quality control engineer in planning experiments to determine the applicability of materials to their designs, to determine the quality characteristics of competitive products, and to find the solution to unexpected troubles which have developed in manufacturing processes or product tests.

Gives Inspector "a Lift"—Inspection benefits in many ways by the introduction of quality control to plant operations. The average inspector finds himself lifted out of the rut of routine inspection and placed on the team to play his part in a very fascinating fact-finding program designed to get results and make him one of the key figures. In many cases it has brought him better tools, a better understanding of the variables which are inherent in every lot of parts he handles. More attention is being paid to his job and the figures he records on the tally sheets.

Daily and weekly performance charts which he posts are attracting the interest of the workmen in the area. Bets are placed on performance bogeys, the competitive spirit is aroused and the inspector takes pride in the improvements made in shop performance. He also feels a greater responsibility for more effort on his part if the trend is the other way. Much of the monotony of 100 per cent inspection is eliminated by the introduction of statistical sampling tables. Demonstrations of the theory of sampling give him confidence in the effectiveness of the sampling techniques when applied to many of the fussy jobs which had previously required 100 per cent inspection.

Sorting good from bad has long been the lot of the inspector. A firm basis for lot acceptance or rejection based on recognized sampling schemes introduces a new concept of inspector responsibility. Returning the trouble jobs to the source, the operator, for sorting has increased the pressure for corrective action. This brings to light in a more effective way the real cause of the defective work. The operator is held responsible for his part, but things beyond his control are then very forcibly dropped in the supervisor's lap. It is needless to say that corrective action is promptly taken.

Inspection Can Be Difficult — Inspection of purchased products can be very difficult and troublesome to an inspector when purchasing specifications are vague or fail to cover the product requirements to the required degree. Very little can be left to the individual's concept of "commercial quality." The glossy promises of a salesman and the evidence presented in the form of samples are not always evident in subsequent shipments of the product. Surface finishes become poorer, dimensional accuracy often exceeds the tolerance on a percentage of the lot, and claims of the manufacturer for stability under stated conditions of time, application, and atmospheric conditions exaggerate the true performance of the product. Improved specifications and ordering practice can help the inspector, but when claims exceed production possibilities very definite action must be taken to get a true picture of conditions to the purchasing department and the vendor.

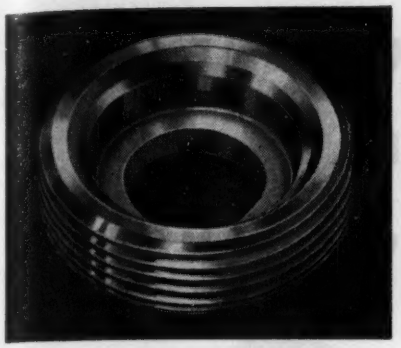
From data obtained from the inspector, the quality control engineer can prepare a report of variations in product together with an engineering analysis of the effect of these variations on the final product. Much experience in this respect has brought about a demand for better quality assurances from vendors. Vendors which are prepared to back up promises with statistical assurance of product quality control in the form of quality reports on shipments will have a distinct advantage in obtaining a good share of the available business. Presentation of statistical evidence of product quality offers a new approach to better vendor-customer relationship.

From paper presented before a symposium and press conference at Hunter Spring Co., Lansdale, Pa., Sept. 21, 1948.

Hoists, Crane Controls In Handling Show Exhibit

Plastic covers on hoists made by Harnischfeger Corp., Milwaukee, will enable those attending the Third National Material Handling Exposition in Philadelphia, Jan. 10 to 14, to see exactly what happens when the control buttons are pressed. This type of through-the-air handling equipment shows ranges from the company's smallest single capacity hoist through its three - phase Zip-Lift and Hevi-Lift hoists up to 15 tons capacity.

Also to be exhibited is a working model of the magnetic crane control —a development which is said to give alternating current crane buyers a more accurate control than the former direct current. A single line bucket for the handling of bulk materials, another working model plus a model of a welding positioner, a piece of equipment reputed to have wide usage for the positioning of work outside of the welding field.



1 **UNIT COST GOES DOWN!**

At first this bearing race job was classed as "impossible"—slow production, excessive rejects and a high unit cost. But now that Carpenter Stainless No. 8 (Type 303) is on the job, *each unit costs only five cents, tool life has doubled and rejects have dropped by 40%.*

2 **SAVED: $456.00 EACH YEAR ON TOOL REGRINDING!**

The cost of each Stainless part is bound to come down when you make a saving like that. *Tool life jumped from a few hours to over 15 days, plus the fact that less down time on machines gave the company production time for over 23,000 extra valve needles per year.* Small wonder that the company is pleased with Carpenter Stainless No. 8 (Type 303).

3 **PRODUCTION UP 25%!**

The Plant Manager told us that he has tried many Stainless Steels and is convinced that Carpenter Stainless No. 5 provides the best finishes and *machines 25% faster than competitive materials.*

here is PROOF that you can reduce unit costs by using *Carpenter* Free-Machining Stainless

To get results like these time after time, the Stainless that feeds into your machines has to be *uniform* from bar to bar. It has to work the same in your machines month after month. And that is just why you need Carpenter Free-Machining Stainless on your jobs.

If you want positive proof that you can reduce your unit costs with *consistently uniform* Carpenter Free-Machining Stainless bar stock—do this. Place your next production order with the nearest Carpenter warehouse listed below. Send your order to Carpenter and find out for yourself that—

YOU CAN TURN IT OUT AT LESS COST
WITH *Carpenter* FREE-MACHINING STAINLESS

"Big Help to Getting More Parts From Every Pound of Stainless" . . .

That is what customers say about the Carpenter "NOTEBOOK on Machining Stainless Steels" with its 96 pages of useful information on Turning, Drilling, Tapping, Threading, etc. For your copy, just drop us a note on your company letterhead. Extra copies of the NOTEBOOK, for the men in your plant, are available at 50¢ each.

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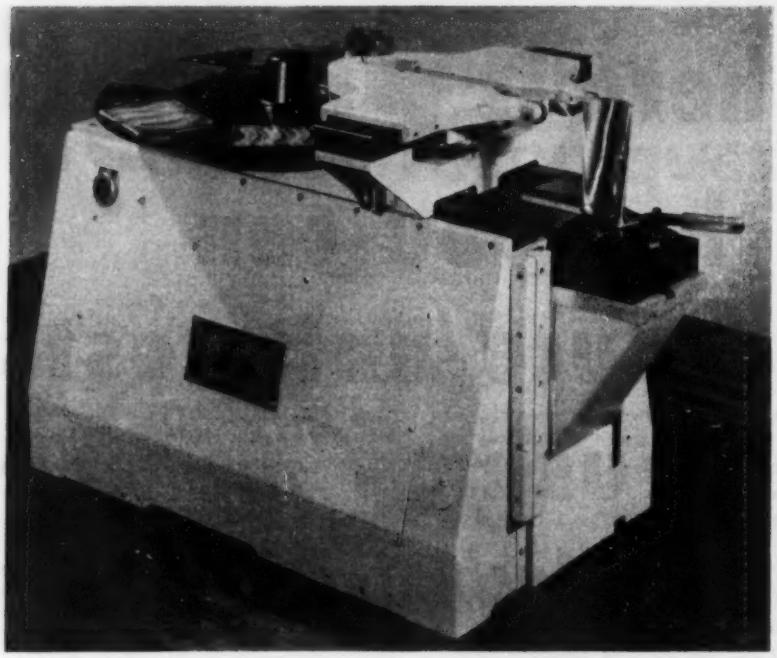


TURBINE BLADE CONTOURS

. . . checked by new automatic method

GREATLY increased production and development schedules demanded for jet aircraft motors have necessitated faster and better methods for inspecting the critical turbine blades and compressor vanes. A jet motor may have anywhere from 800 to 1500 blades in its engines, varying in size from less than ½-inch to over 6 inches in length. Some are twisted, some are tapered at the tip and most are thinner on one edge than on the other, like a knife blade. Inspection of blades is important because one defective blade might throw a whole turbine out of balance, disastrous in an aircraft engine.

Operation of an automatic inspection machine built and then proved under actual production inspection line conditions was clocked at 43 seconds for a 3-section blade; blades were completely checked for contour, twist, thickness, width, etc. in less than 1 minute. A permanent inspection record of each blade is obtained at the same time it is inspected.

The so-called Pant-O-Scriber blade checker automatically traces the blade at the sections to be checked, (usually 3 sections) and a co-ordinated rotating scriber automatically produces an exact scribing on a specially coated glass plate of each section as traced. The sections are scribed on the glass plate in relationship to the edge of the glass and to each other. Coating is a soft green color.

A precision master inspection chart, actual size of the blade, is used together with the scribed plate for inspection purposes. Scribed plate and inspection chart are placed face to face to a predetermined registered position and the scribed blade profile and the master inspection chart are thus projected at any desired size on to a white opaque projection screen, using a standard make vertical lantern slide projector.

For production inspection purposes a "go and no go" bridge tolerance chart is used. This device is precision made to the same actual size of the blade and section spacings of the blade; however, the permissible tolerances are shown on the chart as a series of alternate red and white "bridges"; the outside of the bridges are connected by a wide red band. When an acceptable blade is viewed on the projection screen, the operator sees a series of white "windows" created by the contrast of the green scribed blade profile and the red "go and no go" bridges of the tolerance chart. The "windows" of light must appear within the bridges and any off tolerance condition is easily discernible. The scribed plate can be retained as a permanent inspection record of the blade, or a microfilm photo record of the projection screen can be made. The scribed glass plate can be recoated and used again and again. (Photo shows chart as a dark gray and the blade contour as light gray.)

A special measuring stage, which fits over the lantern slide projector is supplied for engineering and research purposes. This stage is used for measuring the amount of deviation of twist, displacement, thickness, contour profile etc., when desired.

Actual records have been made with the blade checker of blades prior to assembly in jet engines. After periodic test runs of 25 hours, 50 hours etc., the same blades were again put through the Pant-O-Scriber and the scribed profile at the successive test periods were compared with the master inspection chart and records retained. Similar records showing the effect on the blades of heat temperatures, etc., are valuable to the engineering and research departments in developing better engine performance.

Engineers Specialties Division of Universal Engraving & Colorplate Co. Inc., Buffalo, developed the patented Pant-O-Jector method of optical projection inspection of blades which required use of optical projection comparators.

Primers Recommended For Exposed Iron, Steel

Recommendations for the formulation of corrosion inhibitive primers for the protection of atmospherically exposed iron and steel are covered in Red Lead Technical Letter No. 3, published by Lead Industries Association, New York. Selected by the association's committee, composed of representatives of the lead pigment and paint industries, were 11 different formulations, chosen on the basis of outstanding performance under actual field conditions.

Both oil vehicle and fast drying synthetic resin vehicle paints are included to cover a wide range of applications and exposure conditions for shop or field priming of structural steel and other ferrous metals. Specific applications such as bridges, water storage tanks, railroad cars, dam structural work, ship superstructures, pipe lines and mine equipment are covered, along with general structural steel work.

Economics of ALLEGHENY METAL

Research Results: **Especially in acid or salt atmospheres (industrial or coastal areas) Stainless Steel Guy Wire is far better and cheaper than any other type. First cost, installed, is 20% above Material B and 40% above Material C (two commonly-used coated wires) but Allegheny Metal Guy Wire outlasts either of these materials many times over. The very first time that "B" or "C" must be replaced—and this may be necessary as often as every three to five years—Allegheny Metal saves 40% in costs over "B" and 30% over "C" . . . Plus 40% less weight to handle, transport and store . . . Plus greater reliability, maximum protection against chafing and impact, and decades of re-use.**

Memo: **To anyone who uses GUY WIRE on poles, stacks, towers, signs, buildings, etc., ALLEGHENY METAL is best and cheapest in the long run . . . why not investigate it?**

Complete technical and fabricating data—engineering help, too—yours for the asking.

ALLEGHENY LUDLUM STEEL CORPORATION

The Nation's Leading Producer of Stainless Steel in All Forms

Pittsburgh, Penna. . . . Offices in Principal Cities

Allegheny Metal is stocked by all Jos. T. Ryerson & Son, Inc., Warehouses

By EDWIN C. BARRINGER
Executive Vice President
Institute of Scrap Iron & Steel Inc.
Washington

Fig. 1—Baled or hydraulically compressed scrap ready for movement to one of our many steel plants

Scrap Iron and Steel

In peacetime, about 12 per cent of the weight of finished steel is lost or, to be more accurate, is scrapped in the various processes of conversion. In wartime, percentage of loss averages more than 15 per cent, and in case of some individual products, actually runs as high as 85 per cent.

IRON and steel scrap was aptly defined by the steel division of the War Production Board of World War II as "all ferrous materials, either alloyed or unalloyed, of which iron or steel is a principal component, which are the waste of industrial fabrication or objects that have been discarded on account of obsolescence, failure or other reasons."

For the manufacture of iron and steel of every category, scrap is a vital raw material. It is, generally speaking, complementary to pig iron.

Excepting, possibly, the bessemer process, iron and steel may be produced from a charge of all scrap or all pig iron or any combination of these two metallics. However, over a period of years, on the average, the charge of metallics for the manufacture of steel has consisted of one-half scrap and one-half pig iron, and for the manufacture of castings, two-thirds scrap and one-third pig iron.

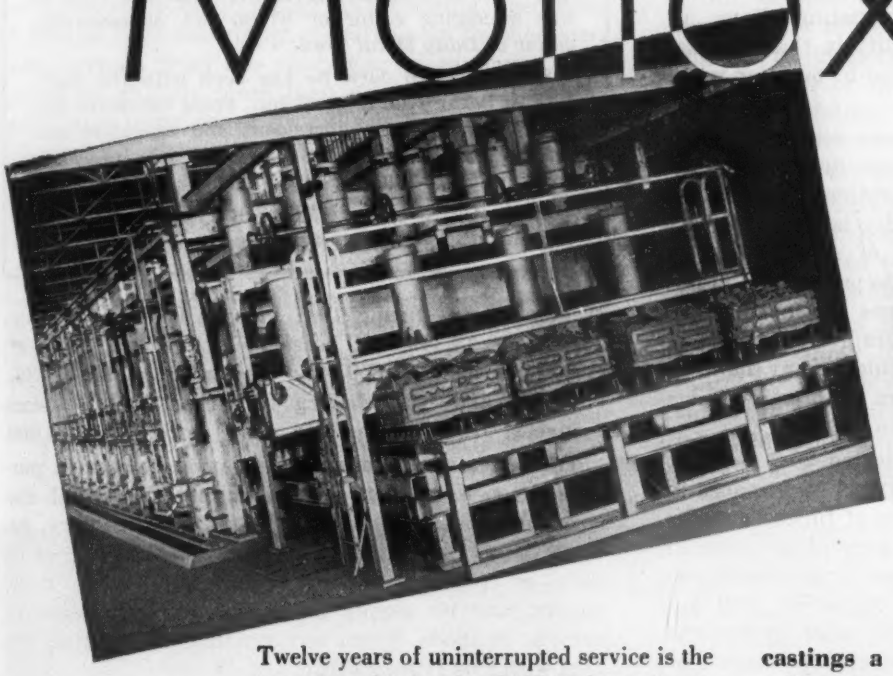
Scrap breaks down into two categories: Home and purchased.

Home scrap, which is also termed revert scrap, is the waste or by-product of the various processes for making iron and steel. It occurs entirely within steel mills and foundries and, except for a negligible proportion which is surplus to the requirements of the steel mill or foundry producing it, is consumed on the premises and not sold in the open market.

When any type of steelmaking furnace is tapped and the heat poured into an ingot mold, impurities in the molten metal, which are termed "pipe", tend to collect at the top center of the ingot. To eliminate these impurities, the top 20 to 30 per cent of the ingot is cropped as the ingot is removed from the soaking pit and before it starts on its way through the various rolling processes.

Ingot crops constitute the largest single item of home scrap. Advances in steelmaking technique have tended to reduce the proportion of the ingot that must be cropped, and the yield from the ingot has been creeping up from about 73 to 75 per cent. Incidentally, while this has reduced the quantity of home scrap, it has meant, conversely, that a higher proportion of steel from the ingot has been shipped to consumers in various forms of finished steel, thus providing an offset in the form of a larger proportion of prompt industrial or factory scrap.

Carbon Monoxide



NO MENACE TO B&W REFRACTORIES

Twelve years of uninterrupted service is the record established by B&W Refractories in a continuous malleableizing furnace operating under high CO atmosphere.

Refractories previously used in furnaces of this type disintegrated rapidly due to the reaction between the prepared atmosphere and impurities in the brick. But with B&W Refractories, brickwork maintenance has been negligible.

Today, this furnace and five similar furnaces in the same plant—all equipped with B&W IFB linings and B&W 80 Firebrick piers—**are malleableizing 450 tons of castings a day without interruption!**

Equally important, the use of B&W Insulating Firebrick has helped to reduce cycle time from 72 hours—required in old type furnaces lined with heavy firebrick—to 30 hours. Significant fuel savings, and improved product quality through closer temperature control have also been achieved.

If you are looking for ways to increase your production and decrease your costs, the use of B&W Refractories in your furnaces will prove of assistance. Your local B&W Refractories Engineer will be pleased to discuss your problems with you.

R-324

B&W REFRACTORIES PRODUCTS

B&W 80 FIREBRICK • B&W JUNIOR FIREBRICK
B&W 80 GLASS TANK BLOCKS • B&W INSULATING FIREBRICK
B&W REFRACTORY CASTABLES, PLASTICS AND MORTARS

•

OTHER B&W PRODUCTS

Stationary & Marine Boilers and Component Equipment
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers
Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

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REFRACTORIES DIVISION
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK 6, N.Y.
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Although cropping of ingots is the principal source of home scrap in steel mills, it is far from being the only source. Every step in the rolling of steel generates some kind of home scrap, such as scale, shearings, cobbles, and misshapen steel generally.

Blast furnaces sometimes produce off heats, which are remelted—salamanders, skulls, even slag being a source for the recovery of metallics.

Gates, risers, sprue, and other waste or by-products of the melting and pouring processes constitute home scrap in foundries which can be charged back in the cupola.

Home scrap has merit in that, in most instances, it is heavy and free from contaminating alloys, although it has an offsetting disability in that residual alloys and other contamination tend to build up within it.

Availability of home scrap is not dependent upon market conditions, subject to price fluctuation, nor the modes of collection and preparation of purchased or open market scrap. Its quantity is in direct proportion to the rate of operation of steel mills and foundries. It is not quoted in trade papers and is not susceptible to any of the techniques employed to increase the supply of purchased scrap. It does, however, figure prominently for calculating availability of melting stock—a generic term embracing home scrap, purchased scrap, and pig iron.

During 1947, home scrap constituted 26.2 per cent of the charge of metallics in all types of furnaces in steel mills and foundries. By types of furnaces, home scrap was 25.6 per cent of the charge of metallics in open hearth furnaces; 4.4 per cent in bessemer converters; 38 per cent in electric furnaces; 32.9 per cent in gray iron cupolas; 50 per cent in air and brackelsberg furnaces; 50.8 per cent in blast furnaces; and 5 per cent in the manufacture of ferroalloys. Stated in gross tons, the actual consumption of home scrap during 1947 in open hearth steel furnaces was 19,345,000; bessemer converters, 196,000; electric furnaces, 1,850,000; gray iron cupolas, 4,739,000; air and brackelsberg furnaces, 701,000; blast furnaces, 1,134,000; and to make ferroalloys, 15,000.

Fig. 2—Oxyacetylene torches are used to cut up large pieces into proper sizes to meet desired specifications

The author spent from 1910 to 1912 at Case school and Western Reserve University in Cleveland.

From 1912 to 1917, he was a political reporter for daily newspapers in Cleveland and Columbus.

From 1917 to 1938, he was with Penton Publishing Co., being in Cleveland from 1917 to 1920, Washington editor 1920 to 1923, Chicago editor 1923 to 1926, and back in Cleveland after that. At one time he was managing editor of STEEL and, subsequently, editor of *Daily Metal Trade*.

Since 1938 to date, he has been with the Institute of Scrap Iron & Steel Inc., being executive secretary 1938 to 1942, president and executive secretary 1942 to 1947, and executive vice president from 1947 on.

He is the author of "The Story of Scrap" and the Institute's annual yearbooks.

The other scrap category is variously termed purchased, open market, or dealer; practically all discussions concerning scrap refer to this category, because it is "produced", comprising an industry of its own, is traded in extensively, is quoted in trade papers, and its supply is susceptible to increase by various methods. From now on this dissertation will deal with this type of scrap.

There are two principal divisions of purchased scrap: Prompt industrial or factory scrap, and obsolescent scrap.

As its name aptly indicates, prompt industrial or factory scrap is the waste or by-product of machining, fabricating, stamping, welding, or otherwise processing and converting rolled steel products and castings into capital or consumer goods.

Only a comparatively small proportion of finished steel products is shipped from the mills rolled or formed to exact size which requires no further processing. Railroad rails, pipe, and some wire products like nails, are good examples. It is the exception rather than the rule when they can be put into service in expressly the same form in which they left the mill.

But the great bulk of rolled steel products such as bars, structural shapes, tank plates, sheets, strip, and tin plate necessarily are ordered oversize by consumers and their conversion into automobiles, refrigerators, railroad rolling stock, bridges, containers, machinery, equipment, products of every kind, naturally entails some loss.

In peacetime, it is apparent that about 12 per cent

of the weight of finished steel is lost or, to be more accurate, is scrapped in the various processes of conversion. In wartime, the percentage of loss averages more than 15 per cent, and in the case of some individual products, actually runs as high as 85 per cent.

Iron and steel castings are shipped from foundries more nearly approximating the desired weight and form for end-use than rolled steel, with the result that, on the average, not more than 5 per cent of the poured weight of a casting winds up as prompt industrial or factory scrap.

Prompt industrial or factory scrap principally takes the form of clippings or skeleton scrap as the waste or by-product of stamping and forming operations, turnings from machining operations on finished steel, and borings from the machining of castings. Inasmuch as slightly more than one-half of all finished steel now being rolled by mills is flat rolled, such as sheets and strip, the resulting factory scrap from processing it necessarily is clippings or skeleton scrap.

Some metalworking plants, of which the best example is large units of the automotive industry, generate enough scrap to warrant installation of hydraulic presses or other equipment for preparing it in a form ready for shipment direct to a steel mill for remelting. Scrap from smaller units—and this constitutes a majority of the tonnage, usually is trucked or otherwise distributed to the yards of scrap dealers where it is prepared or processed for shipment to consumers.

Borings, which are the leading identifiable grade of iron factory scrap, sometimes are briquetted on the premises and charged back into cupolas.

For a factory to prepare its own scrap requires large volume and the diversion of labor and capital from the main manufacturing objective of the plant. It is an individual decision whether the larger return received for prepared scrap warrants the investment in labor and equipment.

But, whether factory scrap moves direct from the plant of its origin to a consuming steel mill, or is shipped as unprepared material to a scrap yard, a scrap broker or dealer is usually in the transaction for the specialized service he can render. In normal times, most industrial scrap is offered in the form of monthly lists for competitive bidding.

In 1947, when consumption of purchased or open market or dealer scrap soared to an all-time high at 26 million gross tons, prompt industrial or factory scrap accounted for between 6 and 7 million tons.

Other division of purchased scrap falls under the general heading of obsolescence. It originates on railroads, in industrial plants, on farms, in homes, shipbreaking establishments, even as imports. It is inevitable from the materialistic concept of the universe that everything it contains is subject to deter-

Fig. 3—Electric magnets handle huge loads of heterogeneous scrap with ease

SUN "JOB PROVED" PRODUCTS CUT COSTS,

Sun products have been "Job Proved" in the lubrication of almost every type of mining, manufacturing, power, and transportation equipment . . . in refrigeration and air-conditioning . . . in metal cutting, tempering, and quenching . . . in the processing of textile fibers, leather, natural and synthetic rubbers . . . in the impregnation of electrical, electronic, and packaging materials of many kinds.

To help you solve your production problems, Sun Oil Company offers a wide selection of "Job Proved" petroleum products, plus the experience of Sun Engineers. Their know-how and detailed product information are yours for the asking. Call your local Sun office, or write Dept. S-1.

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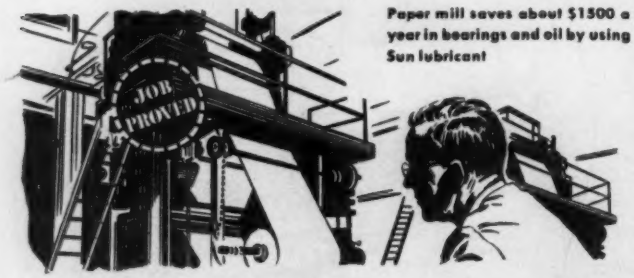
INDUSTRIAL OILS

SUNVIS 900 OILS—High-viscosity-index, paraffinic-type oils—of uniform O F pour point—fortified against rust, corrosion, oxidation, and sludge. The finest available lubricant for turbines, hydraulic systems, and similar applications.

SUNVIS HD 700 OILS—High-viscosity-index oils containing additives which minimize oxidation and give detergency. Ideal lubricants for internal combustion engines subjected to continuous heavy loads under the most adverse conditions.

SUNVIS OILS—Solvent-refined paraffinic-type oils of uniform high viscosity index, low pour point, and low carbon content. Especially suitable for application to long-time use in all types of industrial reservoirs and circulating systems.

DYNAVIS OILS—Low-pour-point, high-viscosity-index, inhibited oils, containing an additive which helps prevent formation of harmful corrosive and sludge-forming acids. Well suited for engines fitted with alloy bearings and operated at high temperatures.



Paper mill saves about $1500 a year in bearings and oil by using Sun lubricant

SOLNUS OILS—Well-refined straight mineral oils. Stand up under hard use for long periods of time. Recommended for use in machine tools, air compressors, certain types of diesels, etc.

CIRCO OILS—Used for general lubrication of industrial machinery when straight mineral oils are required.

SUNTAC OILS—100%-petroleum products which have been compounded to increase their adhesiveness. Recommended for general lubrication of all machines subjected to sudden shocks and load reversals. Cling to the parts to be lubricated.

STEAM CYLINDER OILS—High flash and fire point lubricants for either saturated or superheated steam conditions and for worm-gear speed-reduction units.

SUN CAR JOURNAL OILS—Dark oils meeting A.A.R. Specifications. For use in waste-packed bearings of railroad equipment.

SUN DELAWARE OILS—Dark oils for general lubrication on older types of industrial machinery.

SUNOCO WAY LUBRICANT—For use on tableways. Eliminates chatter and scoring . . . resists corrosion. Has good metal-wetting and adhesive properties, ample viscosity, and E. P. qualities.

SUN MARINE ENGINE OILS—Compounded with special emulsifying agents in order to provide adhesion to, and lubrication of, working parts in the presence of water. For the lubrication of bearings, eccentrics, crossheads, and various other parts of steam engines.

ROCK DRILL OIL—High-film-strength adhesive oil. For use in jackhammers, stopers, drifters, and similar equipment.

INDUSTRIAL GREASES

SUN CUP GREASES—Water resistant. For grease-cup and grease-gun application when service is normal.

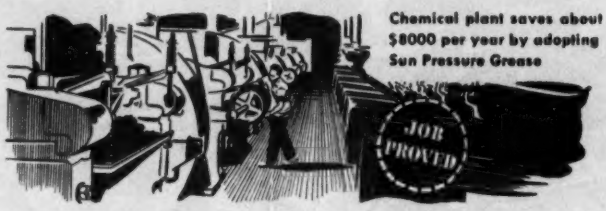
SUN GUN GREASES—Smooth greases made with medium-viscosity oil. Stable under pressure in power and booster guns.

ADHESIVE PRESSURE GREASES—Won't drip or splash. Excellent lubricants for open-gear applications.

SUN DARK PRESSURE-SYSTEM GREASES—For power-driven central grease lubricating systems in heavy industries. Also used as a "medium cup grease."

SUN MINE CAR GREASES—Available in several grades. Suitable for both antifriction bearings and plain-bearing cavity-type wheels.

SUN MINING MACHINE LUBRICANT—Semifluid. For use where a light but adhesive grease is required. Resists separation and decomposition.



Chemical plant saves about $8000 per year by adopting Sun Pressure Grease

SUN ROLLER BEARING GREASES—For use on electric motors and generators and high-temperature machinery equipped with ball or roller bearings.

SUN GEAR COMPOUNDS—Black adhesive open-gear compounds and

"JOB PROVED" IN EVERY INDUSTRY

SUN PETROLEUM

SPEED PRODUCTION, IMPROVE QUALITY

wire-cable greases. Recommended for power presses, mining machinery, worm reduction mills, crushers, pump gears, etc.

SUNOCO TRACTOR ROLLER COMPOUND—For crawler-type tractors. Provides good lubrication with exceptional sealing qualities.

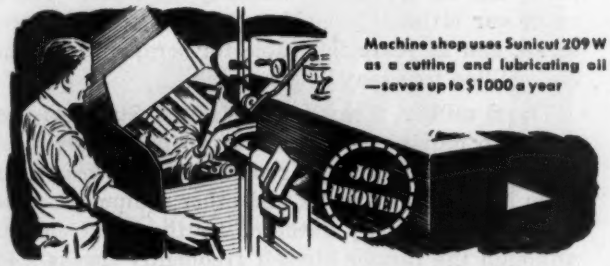
METALWORKING OILS

SUNICUT—Straight (non-emulsifiable) transparent cutting oils. Recommended for automatic screw machines and heavy-duty machining operations. Permit high speed production with excellent finishes, long tool life.

SUNOCO EMULSIFYING CUTTING OIL—A self-emulsifying oil which produces a stable white emulsion. Efficient and economical cooling and lubricating medium for turning, milling, drilling, and other metalworking operations on both ferrous and nonferrous metals. It is also an excellent grinding coolant.

SUN QUENCHING OILS—Specially refined oils designed to aid development of maximum physical properties in a wide variety of steels.

SUN TEMPERING OILS—Specially refined oils for tempering steel. Because of their low carbon content and stability under heat, these oils have an unusually long service life.



Machine shop uses Sunicut 209 W as a cutting and lubricating oil —saves up to $1000 a year

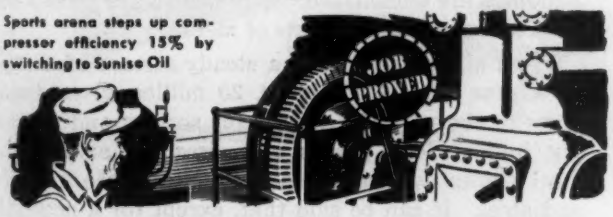
SUN ROLLING OILS—Straight and emulsifying oils which will permit maximum production in rolling steel, aluminum, brass, and copper.

SUN ANTI-RUST COMPOUNDS—Petroleum-base oils with chemical additives designed to prevent the rusting and corrosion of steel.

REFRIGERATION OILS

SUNISO REFRIGERATION OILS—Have extremely low pour points, extremely low wax-separating characteristics, a high degree of stability and long life. Initially neutral and resistant to formation of detrimental acids under service conditions. Suniso Oils are high quality oils suitable for both high- and low-temperature operations. The most widely used oils in refrigeration and air-conditioning.

Sports arena steps up compressor efficiency 15% by switching to Suniso Oil



TEXTILE-PROCESSING OILS

SUNOTEX TEXTILE OILS—Designed to impart certain additional properties to various forms of fibers during their processing from the fiber state into a manufactured product. All Sunotex textile oils are emulsifiable in water. Highest rating in fadometer tests.

SUN COTTON CONDITIONING OILS—Pale mineral oils which condition the cotton. They prevent waste by cutting down excessive amounts of "fly" (fine air-borne lint particles).

Worsted mill obtains easier scouring, better quality, larger yield with Sunotex WO-220

SUN ASBESTOS FIBER CONDITIONING OIL—Used for spraying on the asbestos during processing. Fibers are kept from being damaged or broken down, and harmful dust is minimized when this product is used.

SUN CORDAGE OILS—Generally used alone, but are adaptable to various formulas used by cordage manufacturers. Selected products, highly compatible with additives.

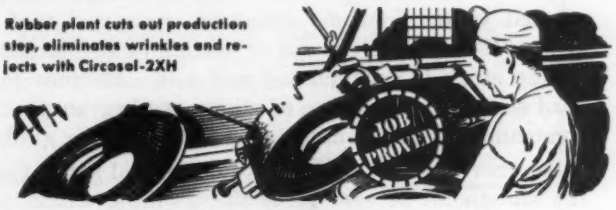
RUBBER-PROCESSING AIDS

CIRCOSOL-2XH—An elasticator and processing aid for natural rubber and especially for GR-S. Outstanding for sponge rubber.

CIRCO LIGHT PROCESS AID—A processing agent and excellent softener for natural rubber, natural rubber reclaims, and neoprene synthetic rubber. Used for GR-S to some extent.

SUNDEX-54—An inexpensive product suitable for processing GR-S and blends of GR-S and natural rubber. An established processing aid for rubber footwear stocks and semihard rubbers.

Rubber plant cuts out production step, eliminates wrinkles and rejects with Circosol-2XH



CIRCOMAR-5AA—A black-colored product for processing natural and GR-S rubber used in tire-making. Also used in reclaiming natural-rubber scrap. Replaces asphalt fluxes. Free-flowing at room temperature.

WAXES

Sun's new wax plant will be completed in 1949. Its many refining innovations and extreme flexibility will permit new types of waxes to be manufactured in large quantities—a procedure heretofore impracticable. A wide range of fully refined paraffin and microcrystalline waxes will be "tailor-made" to meet the requirements of virtually all major industrial applications. Pilot plant samples of several grades are now available.

MISCELLANEOUS INDUSTRIAL PRODUCTS

SUN SOLVENTS—Sun Spirits for the thinning of paints, varnishes, and enamels, and for metal-cleaning . . . a pure, water-white petroleum solvent free of corrosive sulphur. Other Sun solvents with special properties are available for the chemical industry.

SUN LEATHER OILS—Mineral-base leather oils. Used for obtaining the desired tensile strength, proper temper, and controlled moisture content. Maintain a light even color . . . mix well . . . distribute evenly.

"JOB PROVED" IN EVERY INDUSTRY

PRODUCTS

SUNOCO

ioration and that everything in it, even including iron and steel, eventually wears out, or rusts away, becomes outmoded—in short, goes the way of all matter.

Approximately 20 million gross tons of obsolescent scrap was generated in 1947. Because scrap originates in so many places, it almost defies statistical compilation, excepting in matters of consumption and inventories. It is difficult to definitely assign tonnages to the various sources of purchased scrap. It is known, however, that in 1947 about 4 million tons originated on railroads and 1 million tons at shipbreaking yards.

Railroads are continually replacing and improving their trackage, rolling stock, signal systems, bridges, structures, etc., with the result that monthly offerings of railroads are regarded as a solid anchor of the purchased scrap market. Railroads are economical establishments; rails are stepped down from main track to second track to sidings before they are offered as scrap; bolts, nuts, spikes, and other equipment are frequently rethreaded or reformed before finally being discarded; locomotives outmoded in the service of the larger carriers may yet have years of service on smaller lines. But scrap is the ultimate state of everything iron and steel used by the railroads.

Although railroads still offer much of their scrap in a prepared or semiprepared state, the tendency of larger carriers is to put labor into it to obtain an increased yield. In some instances, even rust that is shaken loose in the process of cutting down discarded rolling stock is accumulated and sold. Because railroad scrap is usually free of alloys, the heavier grades command a slight premium over strictly dealer grades.

Another identifiable source of purchased scrap, from the standpoint of volume, is shipbreaking which, understandably, flourishes after wars. Surplus naval craft and merchant shipping that is either in excess of probable requirements or too costly to repair and restore to service provide large backlogs for the comparatively few established shipbreakers, and a large number of temporary ones. It was believed that, in the last half of 1947 and the first half of 1948, yield from shipbreaking after World War II had reached its peak at an annual rate of about 1 million tons. Ship scrap, like railroad scrap, is heavy, generally free from alloys, and a desirable grade.

THE FUNDAMENTALS OF STEELMAKING

This is the second of a series of 27 articles on making steel and finishing it into products ready for the consumer. Watch for additional articles in this interesting and informative series

Auto wrecking yards, frequently mistaken for scrap yards, are primarily in business for the sale of parts from wrecked or outmoded vehicles to service comparable models still operating on the highways. However, the ultimate fate of every car in an auto wrecking yard is scrap, but how soon this fate catches up with cars depends upon the state of the market for parts and scrap, and availability of labor. The average car ultimately yields about 1½ tons of ferrous scrap, and in years favorable for scrapping, as much as 1 million tons may be generated.

The 6 million farms in the United States are estimated to require an average of about 25 tons of iron and steel in the form of roofing sheets, wire fencing, farm implements, trucks, and other equipment. Farm scrap is assiduously gathered by the small collector, although the farmer himself frequently trucks a load to town in the spring when he needs fertilizer, or in the fall when he needs coal.

Metalworking factories generate prompt industrial or factory scrap from the processing of iron and steel. But every manufacturing plant—even a flour mill—is a source of obsolescent scrap in the form of outmoded or discarded machinery and equipment.

Logging camps and mines generate much obsolescent scrap. Highway bridges are frequently replaced by more modern structures. Elevated railroads and buildings are demolished. City dumps are picked over by scavengers for remnants of metal.

From all these sources, a steady stream of scrap—in a year like 1947, almost 20 million gross tons—flows to the yards of dealers for sorting and processing into various grades and sizes for shipment to steel plants and foundries for melting into new iron and steel. It can be said that, except for a negligible percentage of iron and steel which is sunk at the bottom of the ocean, or automobiles or other objects abandoned where they cannot be retrieved or where it is uneconomical to gather, as in the case of razor blades and dental burrs, very little iron and steel eludes the scrap industry.

Of iron and steel scrap, there are 75 separate grades in the specifications written jointly by conusmers, producers, and dealers under the aegis of the De-

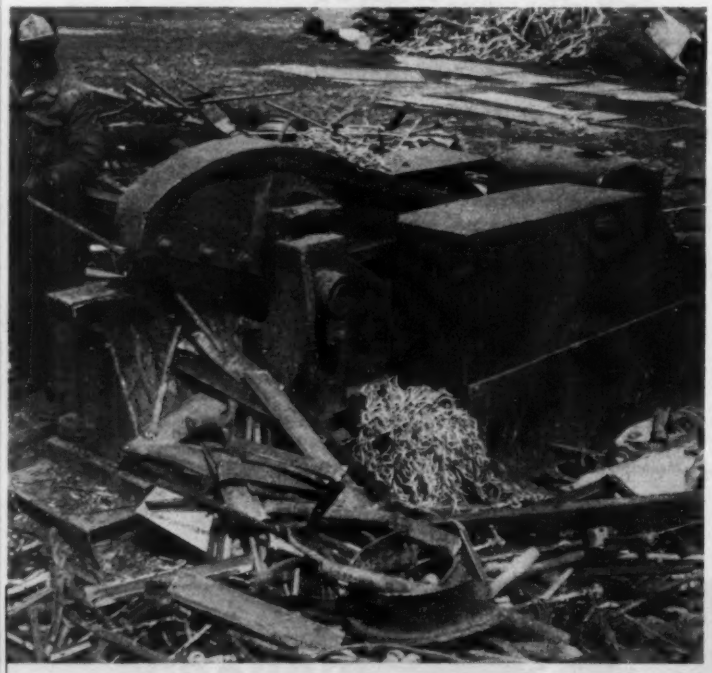


Fig. 4—Operator is shown processing pipe scrap into smaller sections with an alligator shear

Which of these Characteristics do you Require?

These are but a few of the many Wissco steel specialty wires produced by Wickwire Spencer, whose ability to meet exacting specifications has been a tradition for over 125 years.

We can meet your requirements for high or low carbon steel specialty wire; round or shaped; in a wide variety of sizes, tempers, grades and finishes. Send your order or inquiry to Wickwire Spencer.

WISSCO HOSE REINFORCING WIRE, Wissco Shaft Wire and Wissco Crimped Brush Wire, while differing in chemical and physical composition, are all high in tensile strength and are manufactured for specific applications.

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WISSCO SPHEROIDIZED WIRE is dead soft and easy on your wire working machines. After fabrication it is of a suitable type of material for hardening.

WISSCO DENT SPACER WIRE and Wissco Card Wire are held to tolerances as close as one ten-thousandth of an inch . . . must also be uniform in temper and finish and, in case of card wire, must be very straight and uniformly tempered.

WISSCO Wire

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partment of Commerce. The Office of Price Administration, in World War II, established ceiling prices on about 35 leading classifications.

Therefore, the modern scrap yard is a highly organized and mechanized establishment, frequently entailing an outlay of several hundred thousand dollars. Cranes of all descriptions, alligator shears, hydraulic presses, oxyacetylene torches, cast iron drops, laboratories, scales, fleets of trucks and trailers, constitute the working equipment of the modern scrap yard.

The prime grade of open hearth steel scrap must be at least ⅛-inch thick, no more than 18 inches wide, nor more than 5 feet long. Electric furnaces require scrap of smaller dimensions ranging in size from 3 feet down to punchings. Foundries prefer their cast iron scrap in chunks of 125 to 150 pounds. Hydraulically compressed bundles of light steel come in a wide range of sizes, from small cubes of 1 foot each dimension to as large as 10,000 pounds. Blast furnaces prefer short lengths of turnings.

In 1947, purchased scrap constituted 24.5 per cent of the charge in all types of iron and steel making furnaces. By types, purchased scrap was 20.7 per cent of the charge into open hearth steel furnaces; 1.5 per cent in bessemer converters; 59.7 per cent in electric furnaces; 32.6 in gray iron cupolas; 25.9 per cent in air and brackelsberg furnaces; 49.2 per cent in blast furnaces; and to make ferroalloys, 95 per cent.

In gross tons, actual consumption of purchased scrap in 1947 in open hearth furnaces was 15,654,000; in bessemer converters, 69,000; in electric furnaces, 2,907,000; in gray iron cupolas, 4,694,000; in air and brackelsberg furnaces, 362,000; in blast furnaces, 1,098,000; and to make ferroalloys, 288,000.

Unprepared scrap moves principally from its point of origin to scrap yards by railroad and truck. From scrap yards to consumers, practically all steel grades move by rail for convenience of handling by consumers, but there is a steady movement of scrap up the Mississippi and Ohio rivers, and, in the season of navigation, on the Great Lakes and the New York state barge canal. A few foundries receive their scrap by truck.

Scrap is sold principally on a gross ton basis, 2240 pounds. The terms are "suitable and acceptable" to the consumer. The most economical manner of handling at the consuming mill is direct from open top cars to charging boxes, but, to achieve a measure of comfort in regard to metallics, steel mills normally stockpile fair sized tonnages. Most scrap is handled by magnets, although for certain operations such as the handling of light iron for bundling, grab buckets are frequently found economical.

Dealers and brokers whose principal function is collecting, preparing, and shipping iron and steel scrap slightly exceed 1,000 in number. There are probably as many as 4500 dealers who ship one or more carloads of iron and steel scrap per month, but their business covers the entire gamut of ferrous and nonferrous scrap together with other waste materials. Probably 200,000 persons are gainfully employed in the collection, preparation, and shipment of scrap, including, of course, a large number who also, in some manner, handle all waste materials.

Of the 26 million gross tons of purchased scrap consumed in 1947, at least 80 per cent, or approximately 20 million tons, was dealt in by dealers or brokers, and, with the average sale price in 1947 approximately $40 per gross ton, value of purchased scrap thus dealt in, on one turnover alone, was close to a billion dollars.

TABLE I

CONSUMPTION OF SCRAP COMPARED WITH PRODUCTION OF IRON ORE, PIG IRON AND STEEL INGOTS
(In Gross Tons)

Year	Total Consumption of scrap*	Domestic production of— Iron ore	Pig iron and ferroalloys	Steel Ingots
1900	5,100,000	27,553,161	13,789,242	10,188,329
1910	13,100,000	57,014,906	27,303,567	26,094,919
1911	12,100,000	43,876,552	23,649,547	23,676,106
1912	16,100,000	55,150,147	29,726,937	31,251,303
1913	15,300,000	61,980,437	30,966,152	31,300,874
1914	12,200,000	41,439,761	23,332,244	23,513,030
1915	18,600,000	55,526,490	29,916,213	32,151,036
1916	23,400,000	75,167,672	39,434,797	42,773,680
1917	26,800,000	75,288,851	38,621,216	45,060,607
1918	25,400,000	69,658,278	39,054,644	44,462,432
1919	20,700,000	60,965,418	31,015,364	34,671,232
1920	26,000,000	67,604,465	36,925,987	42,132,934
1921	12,400,000	29,490,978	16,688,126	19,783,797
1922	23,700,000	47,128,527	27,219,904	35,602,926
1923	27,000,000	69,351,442	40,361,146	44,943,696
1924	26,200,000	54,267,419	31,405,790	37,931,939
1925	30,700,000	61,907,997	36,700,566	45,393,524
1926	32,200,000	67,623,000	39,372,729	48,293,763
1927	30,700,000	61,741,100	36,565,645	44,935,185
1928	34,000,000	62,197,088	38,155,714	51,544,180
1929	37,600,000	73,027,720	42,613,983	56,433,473
1930	26,600,000	58,408,664	31,752,169	40,699,483
1931	18,300,000	31,131,502	18,426,354	25,945,501
1932	10,000,000	9,846,916	8,781,453	13,681,162
1933	17,400,000	17,553,188	13,345,602	23,232,347
1934	18,800,000	24,587,616	16,138,573	26,055,289
1935	26,415,330	30,540,252	21,372,699	34,092,594
1936	36,358,133	48,788,745	31,029,187	47,767,856
1937	38,006,272	72,093,548	37,127,277	50,568,701
1938	21,344,934	28,447,282	19,160,861	28,349,991
1939	32,434,407	51,829,600	31,854,551	47,141,849
1940	39,758,635	73,859,821	42,320,115	59,805,055
1941	52,871,657	92,499,000	50,055,812	74,042,462
1942	53,808,171	105,526,192	54,377,950	76,380,514
1943	55,045,495	101,247,835	55,158,300	79,318,185
1944	54,776,072	94,117,705	56,153,584	80,037,143
1945	50,170,612	88,376,393	49,034,848	71,162,185
1946	44,182,240	70,843,113	40,962,981	59,455,897
1947	54,106,000	93,248,000	52,865,830	75,699,983
1948	**57,340,000	**83,000,000	**52,400,000	**79,017,000

* Includes Purchased and Home Scrap
** Last four months of 1948 estimated

TABLE II

UNITED STATES STOCKS OF METALLICS

	Consumers' Stocks of Purchased Scrap	Dealers' Stocks	Consumers' Stocks of Home Scrap	Total Stocks of Pig Iron	Total Metallics
Prewar Peak	3,406,000 (12-31-40)	2,116,000 (12-31-39)	1,815,000 (9-30-39)	5,046,000 (12-31-40)	12,383,000
Pearl Harbor (12-31-41)	2,317,000	829,000	1,026,000	1,383,000	5,555,000
Wartime Peak	4,145,000 (12-31-42)	1,092,000 (12-31-42)	1,535,000 (9-30-43)	1,517,000 (9-30-44)	8,289,000
Jan. 1, 1947	1,675,000	355,000	1,034,000	596,000	3,660,000
Jan. 1, 1948	2,590,000	204,000	1,264,000	748,000	4,806,000
Sept. 1, 1948	3,561,000	189,000	1,251,000	815,000	5,816,000

Source—U. S. Bureau of Mines

TABLE III

RATIO OF SCRAP TO PIG IRON CONSUMED IN ALL TYPES OF FURNACES

(In Percentages)

	Purchased Scrap	Home Scrap	Total Scrap	Pig Iron
1935	27.9	28.4	56.3	43.7
1936	26.3	28.4	54.7	45.3
1937	25.2	27.6	52.8	47.2
1938	25.2	28.5	53.7	46.3
1939	23.4	27.4	50.8	49.2
1940	21.5	27.6	49.1	50.9
1941	22.0	29.4	51.4	48.6
1942	22.0	28.5	50.5	49.5
1943	21.9	28.7	50.6	49.4
1944	21.2	29.0	50.2	49.8
1945	23.2	28.3	51.5	48.5
1946	24.7	27.6	52.3	47.7
1947	24.5	26.2	50.7	49.3
1948	27.4	25.9	53.3	46.7

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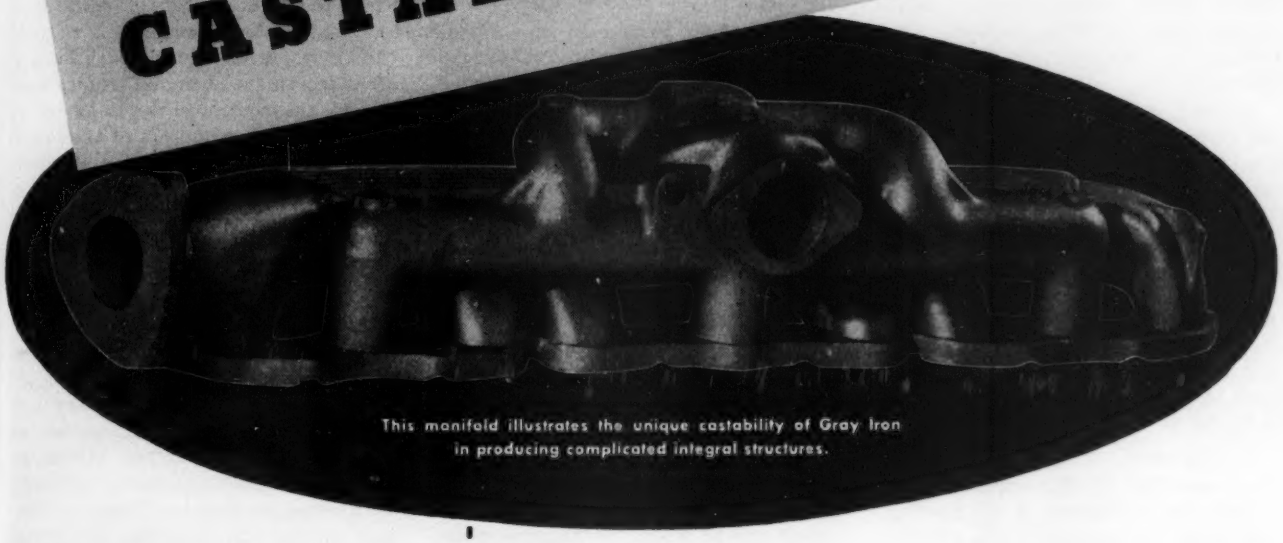

This manifold illustrates the unique castability of Gray Iron in producing complicated integral structures.

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Every gray iron component you use offers not just one but a combination of important properties not obtainable in other materials . . . *plus ultimate economy.* That is why gray iron is so widely used, so difficult to replace with satisfactory substitutes. Send for free booklet, "GRAY IRON—Its Mechanical and Engineering Characteristics and Details for Designing Cast Components."

Make It Better With Gray Iron

GRAY IRON FOUNDERS' SOCIETY, INC.
NATIONAL CITY BANK BLDG., CLEVELAND 14, OHIO

Screw Thread Standards

(*Concluded from Page* 55)

tentative report which it had prepared with the hope that it might serve as a basis for international standardization. No definite agreements were reached, but the need for continued study was recognized.

In 1926, a further attempt was made to unify the British standard Whitworth thread, having an angle of 55 degrees and the American national thread, having an angle of 60 degrees, when a British mission visited the United States and proposed a basic thread angle of 57½ degrees. The compromise was not considered acceptable.

In 1943, a British mission visited the United States, at the invitation of the Combined Production and Resources Board, and Canadian representatives were also invited to participate in the discussions, in which notable progress was made on projects of immediate concern. In August-September 1944 a joint United States-Canadian group, sent to London by the same board, conferred with committees of the British Standards Institution.

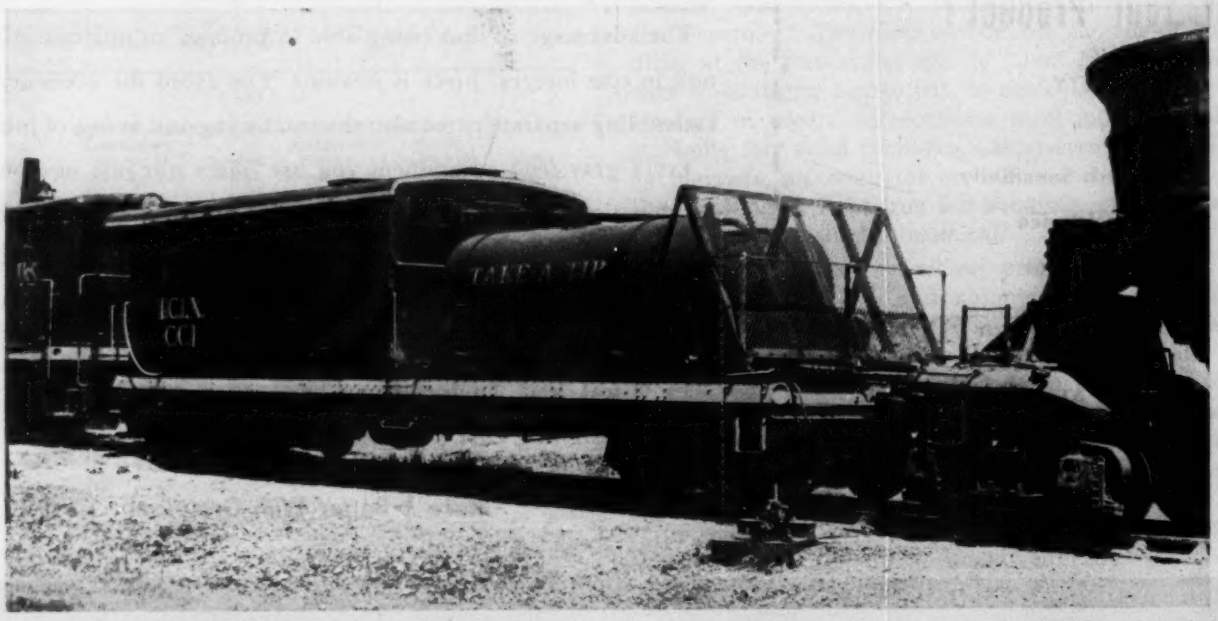
In September-October 1945, under the auspices of the same board, a conference on unification of engineering standards was held in Ottawa, Canada. At this conference a unified form of thread having a 60 degree angle, together with standard sizes and pitches, was agreed upon. The foundation was thus laid for the standards to be agreed on, but a vast amount of work remained to be done in developing and agreeing upon grades of fit and corresponding classes of tolerances and allowances. When a British delegation visited the United States in July 1948, the above basic mathematical formulas for such tolerances and allowances were tentatively agreed upon and later ratified by correspondence, thus making possible the completion of the standards agreed upon at the November 18 meeting.

Work of 30 Years—In one sense, the present accord marks the culmination of 30 years of work by the three nations toward the establishment of unification. In another sense, the accord marks the beginning of the realization of the unification. Purchases by the three governments will be based on the new standards, but industrial use within the normal commerce of each of the nations will require a transformation of industrial practices, involving considerations of engineering, design, tooling, and production. Such a change will take time, but the transition should be completed in the next few years.

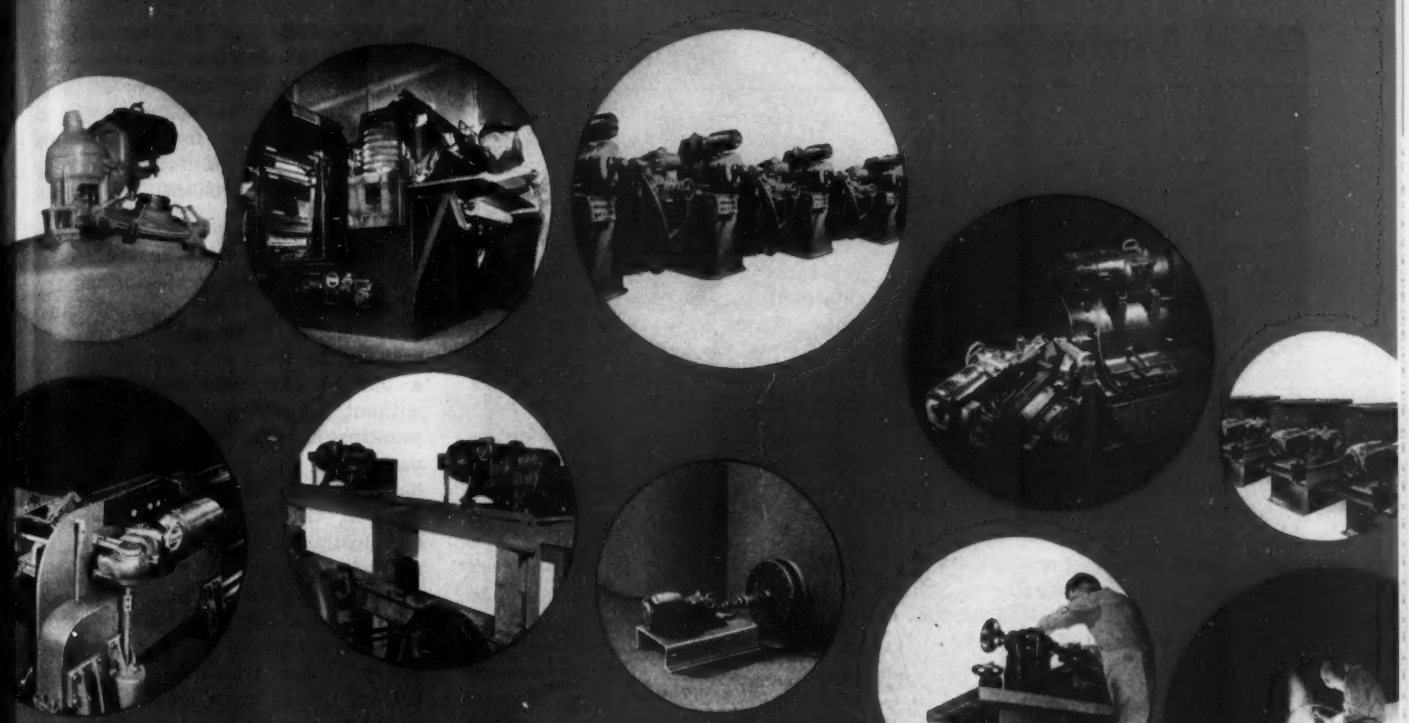
At the same time, continued screw thread research is important. A screw thread is one of the more complex regular geometrical forms. There are so many variables which enter into the design of a satisfactory threaded fastener that most of the knowledge applied in such design has been empirical rather than theoretical. An immediate result of the Ottawa Conference in 1945 was the establishment of the program of research to be carried out by the National Bureau of Standards of the United States, the National Physical Laboratory of England, and the National Research Council of Canada.

The present accord calls for a continuance of future co-operation in the field of screw thread standardization. Such co-operation has two aspects: First, the extension of the unification to the other English-speaking nations (all of which use the English system of measurement in manufacture) and, second, the continued development of standards. The reduction of the varieties of fasteners is one of the possibilities which further studies of standards and simplification may yield in the future.

Moreover, the present accord pertains to the most commonly used type of screw thread. Other important types of screw threads remain to be standardized. In the case of Acme and Buttress threads the unification of standards has reached an advanced stage. Further, standardization of drawing room practices within the countries and their unification among the countries are essential if there is to be an interchangeability of blueprints and production drawings.



COMPRESSOR CAR: Special car built by Tennessee Coal, Iron & Railroad Co., Birmingham, uses compressed air to drive the pistons that tip the slag pots with sufficient force to jar loose the skulls. Coupled directly back of the diesel engine, car mounts compressors, driven by 50 horsepower motors, and two storage tanks which maintain pressure of 100 pounds per square inch. A switch in the engine cab tips the slag pots and empties them into the slag pit



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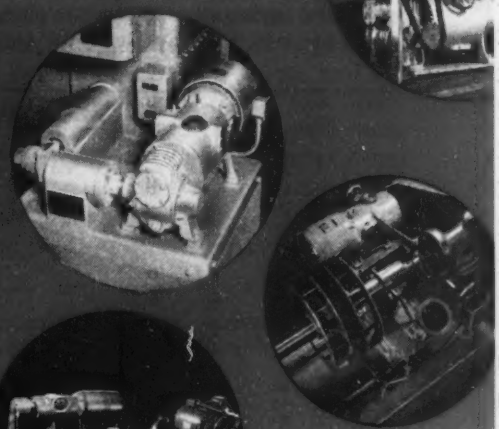
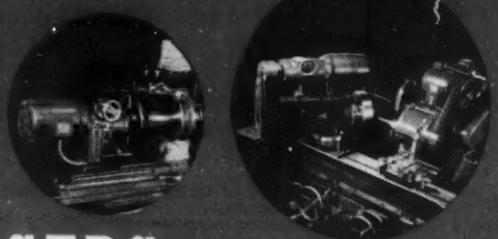




MASTER SPEEDRANGERS

THE MASTER ELECTRIC COMPANY · DAYTON 1, OHIO

Good Brazing Practice— *Continued from Page 59*

method of heating has been recently applied to alloy brazing. It offers some advantages over other methods. It provides rapid heating and localizes the heat close to the joint. Joints must be designed with the brazing alloys preplaced. Parts having uniform shape and thickness are best suited to this method. The shorter time required for heating the metal to be brazed reduces oxidation and thus the amount of flux needed and the cleaning required.

Dip Heating Methods — Using the metal bath method, parts are held in brazing position and dipped into a molten bath of brazing alloy. Brazing of this kind is used mostly to join comparatively small parts. Crucibles for holding the molten alloy may be heated by gas, oil or electricity.

Salt bath brazing has been increasing in use in recent years and the molten bath provides an effective medium for accurate temperature control when using silver brazing alloys. Copper brazing is probably more widely done in salt baths than silver soldering because it was for a time considered easier, but with the advance of the knowledge of salt chemistry and soldering practice, salt bath silver soldering is now common and even soft or lead-tin soldering by this method is not considered impossible.

Salt Baths for Brazing—Baths for silver soldering and brazing in the 100 to 1750° F range are usually eutectic mixtures consisting of chlorides and carbonates. A mixture such as 50 per cent potassium chloride and 50 per cent sodium carbonate, with a melting point of 1085° F, is ordinarily satisfactory for heating of nonferrous metals. For the heating of steel, baths consisting of chlorides only are generally preferred. The alkali chloride mixtures, as for example, potassium chloride 56 per cent and sodium chloride 44 per cent with a melting point of 1220° F are the most easily handled.

Medium temperature salts can be used from about 100° F above their melting points up to approximately 1750° F. Since there are such a variety of salts of varying properties and melting points, it is well to check with the supplier of these mixtures to obtain the one best fitted to the work to be done. For instance, one company, which has done a limited amount of silver soldering in gas-fired salt baths, found it necessary to use the fluorine base salts for this work because other types of salts caused oxidation of the silver brazing alloy and prevented proper flow of the alloy.

High temperature baths have a range from slightly below 1750° F to 2400° F. These baths are not eutectics but are glasses. They do not have a sharply defined melting point but soften gradually when heated. The melting range is ordinarily between 1600° F and 1900° F. These baths consist of various mixtures of barium chloride, borax, sodium, fluoride, silicates, and magnesia or lime. They are sometimes not inert to steel when first used but become satisfactorily so after being in service for awhile. In the case of high temperature baths it is also important to check with the suppliers of these materials to see that the correct mixture is being used for the job and that proper care is taken to keep the composition constant.

Probably the greatest disadvantage of the high temperature bath mixtures is the difficulty of cleaning the salt from the work. In most cases it is necessary to use another salt bath in the form of a pot containing a chloride-carbonate bath, with or without cyanide, and kept at a temperature just above its melting point, preferably below 1200° F. Such a bath not only equalizes the temperature in the work but also reacts chemically with the high temperature salt adhering to the work. The reaction between the carbonates or cyanides in this secondary bath and the high temperature salt produces a heavy sludge which settles to the bottom of the bath and must eventually be removed and thrown away. After cooling in air the brazed assemblies are washed free of salt. However in this connection, a liquid soak was recently developed wherein a material known as Cerfak liquid is mixed in solution with water and held at about 180° F and this solution has been found to be quite effective in removing high temperature salt deposits. It may well be that this process will replace the practice of using a secondary salt pot on many types of work.

Simultaneous Brazing and Carburizing—Salt bath brazing can be combined with a liquid carburizing operation. The procedure is to assemble the steel parts with the brazing material (usually brass) applied at the joint and immerse the entire assembly in an activated cyanide bath for the time required to produce the desired case depth. Then the assembly is removed from the bath and quenched. The braze, as well as the carburizing of the surfaces, is completed.

Considerable economies can be effected by combining the operations in this manner. In one reported case, an automotive starter shaft and gear assembly, the bath used produces a case depth of 0.018-inch in 45 minutes. Brass wire applied at the joint melts during the carburizing cycle. A water quench following the salt bath cycle completes the brazing and hardening operation.

Flux Removal and Cleaning—Commercial flux is readily softened and dissolved, after brazing, in hot water. This can be most easily done while the part is still hot by dipping in

SILVER BRAZING ALLOYS

	Composition, percentage						Melting Point, Deg. Fahr.	Flow Point, Deg. Fahr.
	Ag	Cu	Zn	Cd	P	Sn		
1	10	52	38	....	....	....	1450	1565
2	20	45	35	....	....	....	1430	1500
3	20	45	30	5	....	....	1140	1500
4	45	30	25	nil	....	....	1250	1370
5	50	34	16	nil	....	....	1280	1425
6	65	20	15	nil	....	....	1240	1305
7	70	20	10	nil	....	....	1335	1390
8	80	16	4	nil	....	....	1330	1490
9	50	15.5	16.5	18	*....	....	1160	1175
10	15	80	....	....	5†	....	1190	1300
11	30	38	32	....	....	....	1370	1410
12	40	36	24	....	....	....	1330	1445
13	60	25	15	....	....	....	1260	1325
14	72	28	..	....	....	....	1435	1435
15	56	22	17	....	....	5‡	1164	1200

* Proprietary alloy, "Easy Flo"
† Proprietary alloy, "Sil Fox"
‡ Proprietary alloy, "Ready Flo"

The addition, not to exceed 0.5 per cent, of Cd to assist in fabricating the first and second items shall not be considered as harmful impurity.

Items 1, 2 and 3 are suitable for brazing purposes which require a solder that flows more readily than the ordinary copper-zinc brazing solders.

Items 4 and 5 flow freely at a still lower temperature and are recommended for use where strong joints are required and in cases where heating to a sufficiently high temperature to flow items 1, 2 or 3 would be injurious to the article being soldered. Items 6, 7 and 8 are higher grade silver solders and are recommended for special cases where a high degree of malleability and ductility is required.

Presented through the courtesy of the American Society for Metals. See *Metals Handbook*, 1948 edition.

water, wiping with a wet swab, or brushing with a wet brush. Parts may also be hot washed, acid dipped or sand blasted, depending on the finish desired. In some cases flux removal is difficult, due to the large amount of oxides dissolved by the flux. This changes its composition into a relatively insoluble salt which must be removed by mechanical means. Addition of a small amount of acid to the hot rinsing water is sometimes advantageous.

REFERENCES

1. For formula commonly used in figuring shear depths on tubular joints, see Bulletin No. 12-A published by Handy & Harman, 82 Fulton St., New York 7
2. Reprinted from the ASM *Metals Handbook*, 1939 edition

ACKNOWLEDGEMENT

The authors acknowledge with thanks the assistance of Anthony M. Setapen, Handy & Harman Co., New York; Charles E. Cunningham, Selas Corp. of America, Philadelphia; H. M. Webber, General Electric Co., Schenectady, N. Y.; N. M. Salkover, Salkover Metal Processing Co., Cincinnati; and Roger W. Edmonson, Metallurgical Service Inc., Dayton, O., in the preparation of this article

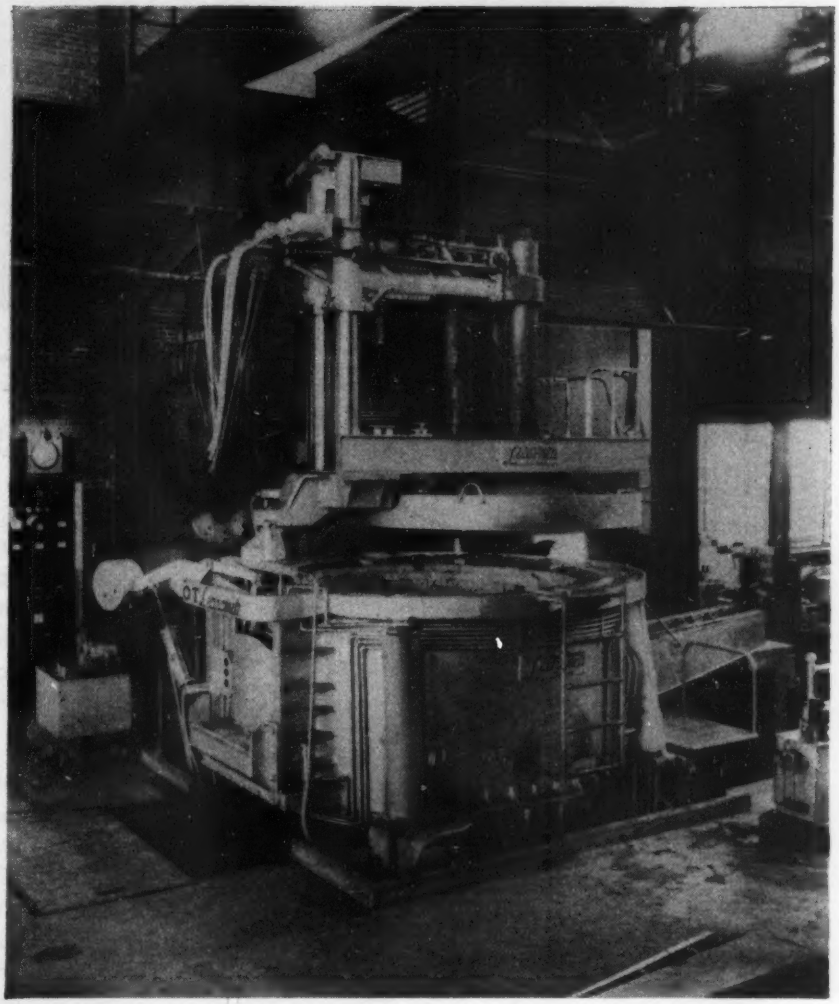
Based on information letter No. 25, metals committee, American Gas Association

Wire Rope Life Increased By Unusual Sheave Rim

Each of three draglines used in the only straight line gravel plant in the United States, operated by Henry J. Kaiser interests, has 2½ cubic yard bucket, operated by 75 horsepower electric motors using 750 feet of 1-inch hemp center preformed wire rope. The haul back lines are 1600 feet long and are ⅝-inch hemp center preformed wire rope.

The main line passing over the groove of a 14-inch sheave located 20 feet from the drum acts as a fine grinding emery. The resultant wearing action made it necessary to repair and build up the grooves or replace the sheaves at least once a month. The main line had about half the life it should have had, even when longer lasting rope was used.

Perfection of a sheave with a demountable rim and groove which could be replaced in 5 minutes time was the outgrowth of this experience. A conventional 14-inch sheave was used, the groove being cut off and put on a demountable rim. With six ½-inch bolts and lock washers on centers, the groove of the sheave could be changed without changing the entire sheave. To correct the condition of heavy wear due to the action of the sand on the rope through the groove, the groove was cast from medium hardness manganese. Where main line rope previously had to be retired after 60 days of operation, it now lasts 140 days. Groove life has been increased 10 times.



A size OT Pittsburgh Lectromelt Furnace shown with the roof in raised position and swung aside for charging. This size Lectromelt has an hourly rating of six tons and normally pours 12 to 15 tons per heat. The Lectromelt OT is particularly popular for use in making billet size ingots and its output capacity is approximately that of a 100 ton open hearth furnace operated continuously on batch cold melt pig and scrap basic or acid working. Note particularly the four point roof suspension, large diameter roof ring, hydraulic tilting mechanism and power-operated electrode clamps—all features which provide efficiency and durability in operation.

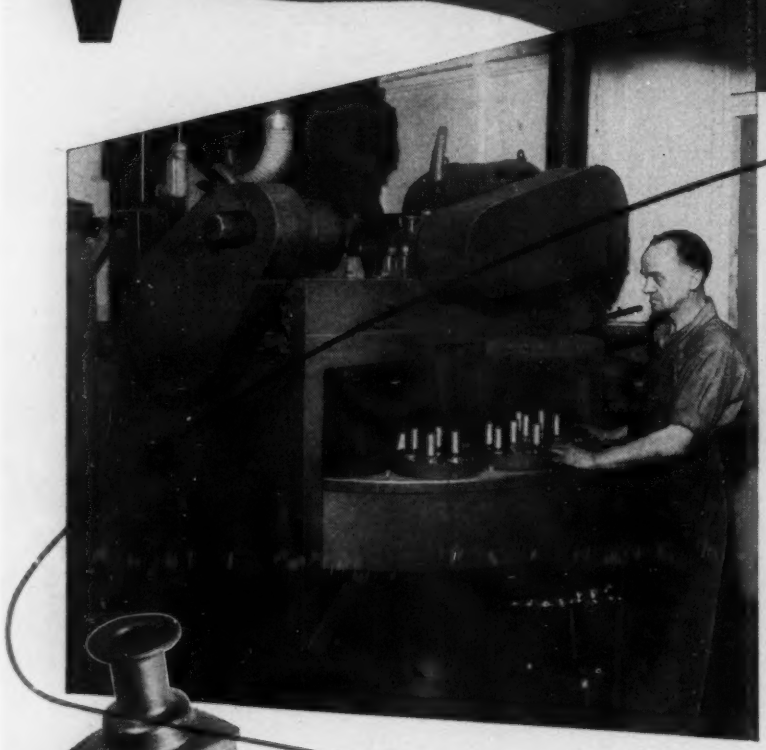
For complete information on Lectromelt furnaces in sizes ranging from 100 tons to 250 pounds, write today to

PITTSBURGH LECTROMELT FURNACE CORP.
PITTSBURGH 30, PA.

MOORE RAPID Lectromelt FURNACES

are manufactured in: CANADA, Lectromelt Furnaces of Canada Ltd., Toronto 2; ENGLAND, SWEDEN, AUSTRALIA, Birlec, Ltd., Birmingham, England; FRANCE, Stein et Roubaix, Paris; BELGIUM, S. A. Belge, Stein et Roubaix, Bressoux-Liege; SPAIN, General Electrica Espanola, Bilbao; ITALY, Forni Stein, Genoa

Versatility IN CLEANING HEAT TREATED PRODUCTS

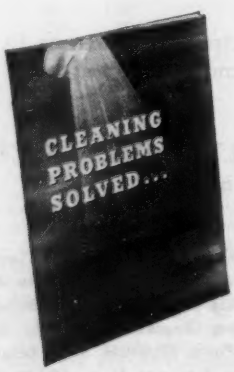


In the manufacture of complex mechanical and electrical devices, American Bosch Corporation, Springfield, Mass., encountered the problem of cleaning thousands of different metal parts. Since sizes and shapes varied considerably existing cleaning equipment was unable to handle the large and diversified volume of pieces.

This progressive organization investigated various types of blast cleaning equipment and decided upon an airless WHEELABRATOR MULTI-TABLE. In operation the machine was found to be most practical for general deburring and to impart an excellent pre-plating surface to a wide variety of parts.

How American Bosch Corporation Is Using This Versatile Blast Cleaning Machine

- Removing heat treating "skin" from hardened fuel injection parts prior to grinding.
- Cleaning heat treated parts to prepare them for cadmium and zinc plating.
- Cleaning of pieces prior to nitriding to obtain uniform nitriding.
- Preparation of magnesium and aluminum parts for anodizing and dichromating.
- Determining varying zones of hardness in sectioned forgings, bar sections, etc., after heat treatment.



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509 South Byrkit Street, Mishawaka 5, Indiana

Representatives in Principal Cities

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

New Products and Equipment

Folding Truck

Weighing only 60 pounds, yet having a load rating of 1200 pounds, the Wesley Fold-A-Truc, announced by Waprin Corp., 501 South Jefferson St., Chicago 7, Ill., is an aluminum platform utility truck which is collapsible. Its collapsible handle folds against the platform when the truck

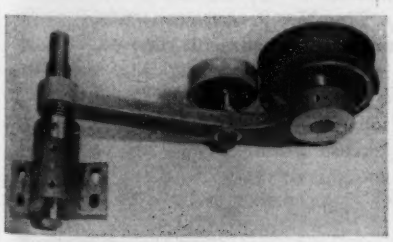
is not in use, permitting storage in a space only 10 inches deep.

The truck is riveted throughout and its 24 x 40-inch heavy aluminum plate platform is reinforced with a heavy aluminum angle running the length of the platform. It has two swivel and two rigid 5-inch double ball bearing casters for easy maneuverability.

Check No. 1 on Reply Card for more Details

Conveyor Line Marker

Adaptable to most existing conveyor lines, a friction drive conveyor line marker made by Wm. A. Force & Co., 216 Nichols Ave., Brooklyn, N. Y., will date, code or mark for production control. The standard wheel is 5 inches in diameter with an overall width of 2 inches which provides a printing capacity of 1 inch. Made of aluminum castings, the unit can be used in a vertical or horizontal position.

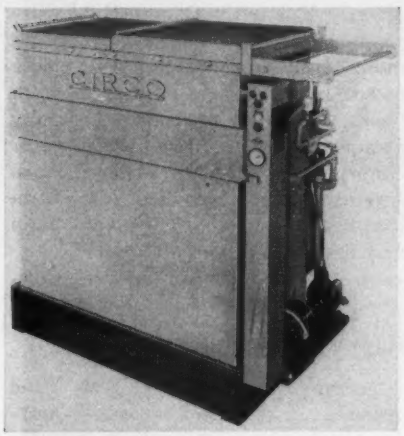


Printing wheel has two rubber friction bands under adjustable spring tension for proper driving friction. Inking roll is a felt roll with adjustment to compensate for wear. The printing wheel is furnished either as a continuous marking roll or with a spring return so that it returns to a specific printing position after each impression. Type is interchangeable and made of rubber.

Check No. 2 on Reply Card for more Details

Vapor Degreasers

Completely automatic and push-button controlled, the line of vapor degreasers made by Circo Products Co., 12117 Berea Rd., Cleveland, O., has all surfaces exposed to solvent vapors protected by stainless steel. Units have a built-in reservoir tank



for liquid solvent, flushing and for automatically restoring solvent to proper operating level in the tank. Cleaning is made easier by a large removable leakproof clean-out door.

Pushbutton controls have indicating lights which, with a temperature gage, constantly show operating condition of the degreaser. Units effect a 20 per cent increase in work capacity and speed through efficient and thorough cleaning of metal parts. Elimination of moving parts assures lower maintenance costs.

Check No. 3 on Reply Card for more Details

Abrasion Testing Set

Incorporating a rotary abrading action on a 4-inch specimen, the model No. 100-109 abrasion testing set marketed by Taber Instrument Corp., 150 Goundry St., North Tonawanda, N. Y., develops wear from alternately rubbing the flat surfaces of two resilient Calibrase wheels over the surface being tested. A range of standardized abrasive wheels is available for testing all types of surface finishes, including electroplate, porcelain enamel, organic coatings, leather, glass, plastics and woven textile fabrics.

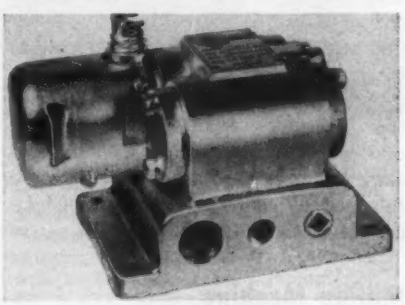
Features include: Improved suction pump with vertical dust receiver; control unit for adjusting amount of

suction; adjustable timer to provide test period of 1000 cycles or less; and switches to provide any combination of operating conditions. Control unit is equipped for dual operation, permitting two specimens to be tested simultaneously using the same controls and vacuum unit.

Check No. 4 on Reply Card for more Details

Valve Assembly

Line of solenoid operated Ring-Seal air valves, developed by Viking Products Co. Inc., 2373 East Eight Mile Rd., Hazel Park, Mich., has a single interchangeable and quickly replaceable valve assembly on all valves up to 3/4-inch or larger, whether they are three or four-way or three, four



or five port. Design is largely responsible for the high operating speed of which the valves are capable—600 strokes per minute.

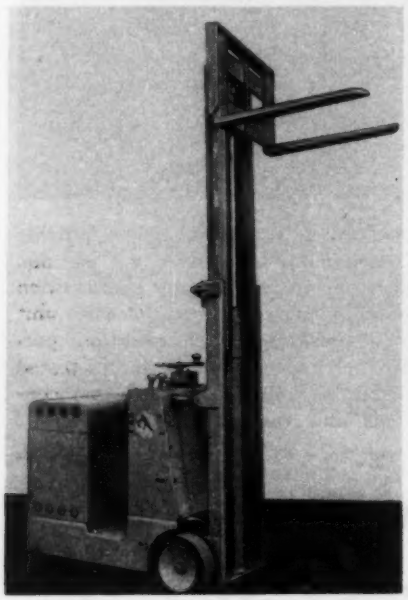
One valve assembly is used in three-way valves and two in four-way. They are direct acting and return to normal position by spring pressure, assisted by an exhaust air blast. Standardized interchangeable

valve assembly is of double opposed type, being completely balanced, reversible and removable from the valve housing from either end. All are designed for operation as standard with 110-volt, 60-cycle alternating current with air pressure up to 105 pounds per square inch or more.

Check No. 5 on Reply Card for more Details

Electric Fork Truck

Available in both telescopic and nontelescopic models is the 1500-pound capacity electric unit added to the Master line of Standrive power fork trucks made by Lewis-Shepard Products Inc., 272 Walnut St., Watertown 72, Mass. Rated capacity is



with a full 48-inch capacity load. Telescopic type has a collapsed height of 83 inches and a lifting height of 129 inches.

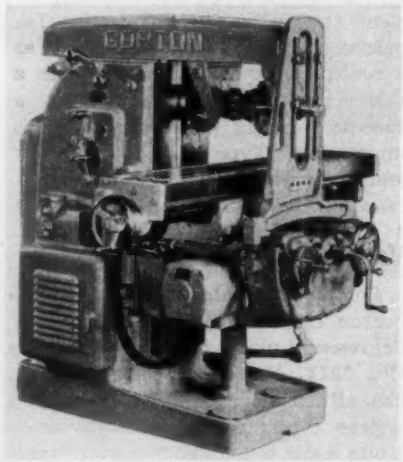
The 34-inch width, proper weight distribution and a rigidly reinforced frame afford a low center of gravity and stability and safety of operation. Pivot point steering permits operation with ease in confined or restricted areas. Standrive operation makes travel in reverse as safe and easy as forward. Deadman brakes are released by depressing brake pedal.

Check No. 6 on Reply Card for more Details

Milling Machine

George Gorton Machine Co., Racine, Wis., is announcing its horizontal 2-28B full width plain type milling machine, designed for heavier milling cuts and for maximum performance with carbide cutters. Ten horsepower is delivered to the spindle through a highly efficient gear train. A separate motor is used for longitudinal, cross and vertical power feeds. The full width knee is mounted on the column by a square lock bearing which is almost as wide as the saddle is long.

Bearing spread almost equal to table travel prevents sag when table

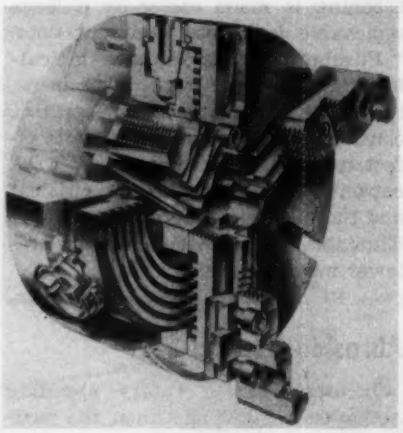


is fully run out. Column is a one-piece structure which combines maximum stiffness and rigidity. Spindle motor is totally enclosed in column base. All controls are closely grouped at front of knee for operator convenience; all are full directional. Lubrication for spindle, gear train and speed box is provided by pump and reservoir in column.

Check No. 7 on Reply Card for more Details

Heavy Duty Chucks

Serrated step-along jaws and American standard tongue-and-groove jaws are offered on the line of extra heavy duty three-jaw geared scroll chucks made by Warner &



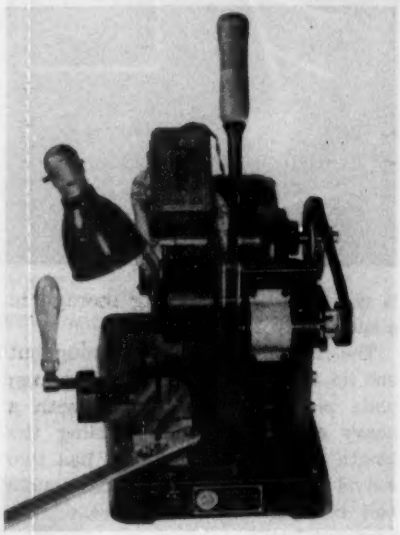
Swasey Co., 5701 Carnegie Ave., Cleveland 3, O. Developed for higher rates of metal removal, the chucks are built in 8, 10, 12, 15, 18, 21 and 24-inch sizes and will fit 6 to 15-inch American standard flanged spindle noses of any machine.

Chuck body is forged of high carbon steel and the back plate is cast iron. Scroll is machined of alloy steel, hardened to 420 brinell. Wear points have bronze bushings. A hardened steel shouldered sleeve at the pinion lug end rests against the tips of pinion teeth to take thrust and radial loads. Serrated jaw chuck has master jaws with limited travel, major adjustments being obtained by positioning the reversible top jaws which are adjustable in ¼-inch increments. Six grease fittings provide for adequate lubrication.

Check No. 8 on Reply Card for more Details

Miller Attachments

Range is increased along with productive ability with the No. 7 vise, one of the new attachments available for use with the high speed, ball



bearing, motor driven hand miller for light cuts in brass, aluminum and similar materials, made by H. B. Rouse & Co., 2214 North Wayne Ave., Chicago 14, Ill. Vise is fitted with a specially slotted removable jaw, enabling it to hold odd-shaped pieces. It can also be converted into an economical jig for use on other equipment.

The No. 9 cast iron safety cutter, another attachment, reduces personnel injuries by locating and adjusting to left or right for the particular job. The guard can be drilled for a coolant fitting which will convey the coolant directly to the cutting tool.

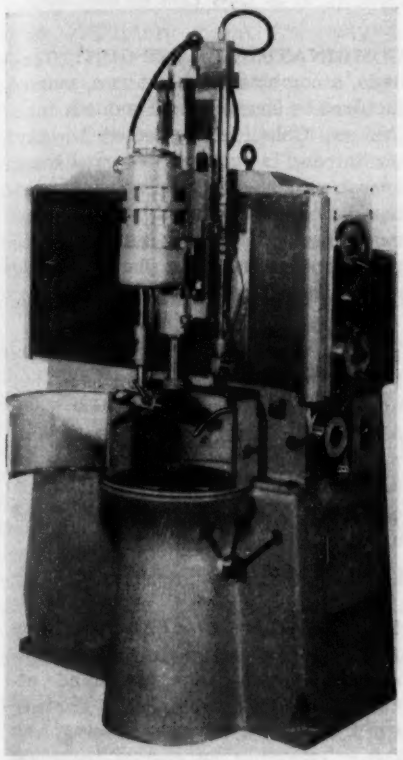
Check No. 9 on Reply Card for more Details

Vertical Grinders

Hydraulically operated vertical universal grinders, made by Springfield Machine Tool Co., Springfield, O., are offered in two sizes with swing capacities up to 32 inches in diameter and nominal grinding capacities of 24 inches in diameter. With the ver-

tical design, work is laid on a solid foundation instead of being suspended, improving work visibility, set-up convenience and vibration conditions due to gravity.

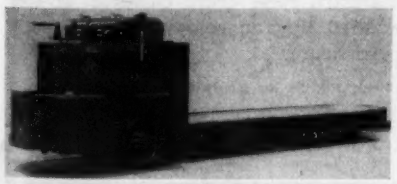
Features contributing to precision control are: Swiveling wheel head slide, solid adjustable stops, variable feed, tarry control, facing feeds. Related tolerances where several consecutive operations are completed in one set-up of the work involving combinations of internal, external, face, shoulder and angular grinding, are facilitated by these features.



Check No. 10 on Reply Card for more Details

Platform Truck

Elwell-Parker Electric Co., Cleveland, O., is announcing a new industrial truck with a platform 12 feet long and 11-1/2 inches above the floor in a lowered position. Its carrying capacity is 20,000 pounds and platform width is 32 inches. Maximum elevated height is 17 inches. Platform is raised by means of two cylinders actuated hydraulically by the driver through a hand lever control.



A feature is the four sets of wheels under the platform. Hydraulic power steering mechanism enables the driver to turn the truck in 99-1/2-inch aisle intersections. The truck is all electric or gas-electric powered.

Check No. 11 on Reply Card for more Details

Thread Generator

Machine tool lead screws, feed screws, worms, etc., may be produced on the automatc thread generating machine introduced by George Scherr Co., 200 Lafayette St., New York 12, N. Y. Using the hour glass (globoid) worm generating principle, this type of curved worm contacts the worm gear over its full length. It is not necessary to index for multiple start threads.

Driving the cutter directly from the wormwheel eliminates any errors which might be introduced by change gears, backlash of couplings, keys, etc. Due to the fact that both the work and the master screw are equally supported in bushings, any bending or sagging due to their own weight is eliminated. Cutters are of high speed steel and are sharpened on

IF you're looking for a heavy-duty, rigidly constructed, all-purpose press for assembly and disassembly of large gears, rolls, armatures and similar parts in general machine shop work, it will pay you to consider the R. D. Wood Hydraulic Wheel Press. This press requires no pit, and it has self-contained pumping unit and controls. A pneumatic pull-back device eliminates counterweights and gives a faster rate of ram return than is obtainable on ballast-weighted devices. Years of R. D. Wood design ingenuity are built into this press . . . your assurance of quick, economical, *dependable* performance of vital general shop work. These Wheel Presses are available in capacities ranging from 100 tons to 1000 tons, with tie-bar clearances ranging from 48" to 120". Send for literature *today*, and remember R. D. Wood engineers are always available for consultation on *all* hydraulic press problems.

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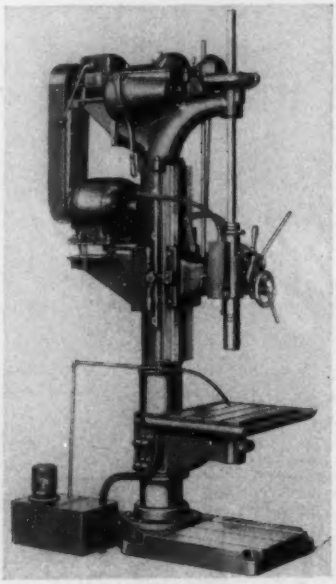
their face only. Bed is of the box type construction. Control of depth of cut is by means of a hand wheel, graduated in 1/1000-inch. Various attachments are available.

Check No. 12 on Reply Card for more Details

Drilling Machine

Sibley Machine & Foundry Corp., South Bend, Ind., is offering a model D drilling machine with 24 and 28-inch swing. The new model has a V-belt drive direct from the motor to a 4-speed geared transmission which is part of the top frame assembly. Speed changes are by an inch-



ing button on a four-station switch at the front of the machine and the four-speed transmission lever.

Three optional ranges of spindle speeds are available: 21 to 365, 25 to 419 and 37 to 650 revolutions per minute. Split spindle quill bearing in head is easily adjusted to compensate for wear. A 5 horsepower motor provides ample spindle power for the recommended capacity of 1-3/4 inches in mild steel. Electrical reversing for tapping is included. A 24-inch head travel on column and a 11-inch spindle feed permit a wide range of drilling.

Check No. 13 on Reply Card for more Details

• • •

CONTROL VALVE: Modernair Corp., Oakland 8, Calif., has developed a new solenoid operated valve designed for operation on maximum line pressures of 150 pounds per square inch. Coils are furnished as standard for 110/220 volt current operation with current consumption on 110 volts of 1 ampere. It is available with 440 volt coils as standard or coils for 440 volt operation may be secured and substituted by removing end cover.

Check No. 14 on Reply Card for more Details

SOLUTION DISPENSER: For fast and accurate measurement of solutions used for routine testing, Precision Scientific Co., Chicago 47, Ill., offers a solution dispenser. It is designed for dispensing 100 milliliters, but may be varied by using other pipets.

Check No. 15 on Reply Card for more Details

TROLLEY WHEEL BEARING: Jervis B. Webb Co., Detroit 4, Mich., has designed a trolley wheel bearing that retains the lubricant under any operating conditions. Grease retaining element consists of a double labyrinth seal and adequate lubricant cavity.

Check No. 16 on Reply Card for more Details

FASTENER: Quick and easy attachment of stove door handles can be accomplished with a new Speed Nut developed by Tinnerman Products Inc., Cleveland 13, O. The fastener assures neat door assembly because attaching screws do not penetrate the door liner. No threaded inserts are required in door handle.

Check No. 17 on Reply Card for more Details

BELT IDLER: Belt idlers designed for use wherever movement of bulk materials is indicated and principle of belt conveying is practical are offered by Palmer-Bee Co., Detroit 12, Mich. Idler rolls are identical for each width of belt. Lubricated for life ball bearings are also featured.

Check No. 18 on Reply Card for more Details

WELDING ELECTRODES: North American Philips Co. Inc., New York 17, N. Y., offers manual arc welding electrodes in lime ferritic, iron oxide and organic types. They work satisfactorily with standard welding equipment on alternating or direct current, reverse or straight polarity.

Check No. 19 on Reply Card for more Details

STARTING SWITCHES: General Electric Co., Schenectady 5, N. Y., offers a line of manual starting switches for use with fractional horsepower motors. They are available in five types: With general purpose enclosure, without enclosure, a combination unit and selector switch, with cast iron enclosure for wet locations, and a similar type for dusty or hazardous locations.

Check No. 20 on Reply Card for more Details

PORTABLE GAGE: Pla-Chek, a 6-inch, portable gage for checking of smaller jobs is offered by Cadillac Gage Co., Detroit. It is recommended for checking of gages, tools and dies either on surface plate or at the machine. It is completely self-contained and is accurate to 0.00005-inch.

Check No. 21 on Reply Card for more Details

COMBINATION BLAST GUN: Tornado, a combination blast gun, manufactured by Engineered Products Inc., Denver, Colo., is connected to any air line and is equipped for sand blast operations or spraying solvents and liquids. Nozzle is easily changed by loosening a retaining nut and slipping another nozzle in place.

Check No. 22 on Reply Card for more Details

FILING SYSTEM: Steelmaster's Futura Junior filing system is offered by Art Steel Sales Corp., New York 63, N. Y. This system is recommended wherever papers must be filed and kept readily available. It can be "built-up" to meet any of the user's needs.

Check No. 23 on Reply Card for more Details

FASTENERS: A spring steel Snap Nut that makes quick work of anchoring nut-to-panel for blind attachments, is offered by Prestole Corp., Toledo 6, O. No welding, riveting, clinching or special tools are necessary. Nut is pressed into assembly position.

Check No. 24 on Reply Card for more Details

PLUG-IN STRIPS: A continuous strip of electrical outlets is available from National Electric Products Corp., Pittsburgh. Installation is made by joining either 3 foot or 6 foot standard lengths.

Check No. 25 on Reply Card for more Details

WRENCH: No. 5001 universal type wrench offered by Aero Tool Co., Los Angeles 3, Calif., has sockets and lugs placed so that it will fit all standard steel drum closures. It has a steel lip for removing steel caps over drum.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

OUTLOOK—Rising note of caution is evident in the steel markets with both producers and consumers alerted for any developments which definitely point the way the business wind is blowing. Demand for some products appears more spotty than at any time since before the war but whatever slack has developed to date has been quickly taken up from other consuming directions. There have been relatively few order cancellations or holdups received by the steel mills, and these have been minor. So far as can be determined consumer requirements for the major steel products still promise to continue in excess of supply.

DEMAND—Only here and there is any easing in pressure for shipments noted. With buyers displaying increasing inventory-consciousness, however, expectations are some shifting in tonnage movement will be experienced over coming weeks and months. In sheet steel, for example, while the demand outlook continues strong, sufficient spottiness has developed in this market to indicate increasing uncertainty among consumers with respect to future operations. Some manufacturers of light household appliances, deep freeze, air conditioning units and stoves have cancelled tonnage.

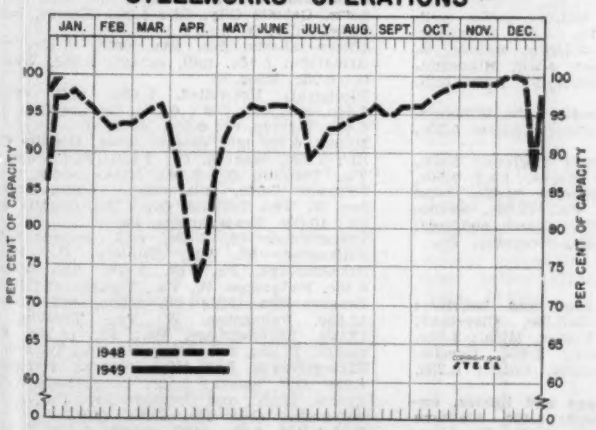
DEFENSE NEEDS—For some time past some market observers have been pointing to defense requirements as a reservoir of steel demand that will take up any slack which may develop in normal consuming channels. However, defense business to date has not been unusually impressive and it is beginning to look as though rearmament as a prop to activity in the metalworking field may be over-emphasized.

ALLOCATIONS—Fate of Public Law 395 under which the voluntary allocations program is administered will not be known for several weeks at earliest. President Truman's request to Congress for standby powers to allocate key materials in short supply, such as steel, brings the present allocation law into clearer focus and since it expires Feb. 28, action extending or replacing it with a new measure is likely fairly soon. Meanwhile, the steel industry has voluntarily extended most major programs.

PRICES—Considerable uncertainty is exhibited with respect to prices. With production costs still rising it is doubtful the mills can absorb the increase indefinitely. Latest cost hike results from new emergency freight rate increases, effective Jan. 11. While these add to steelmaking costs, no immediate change in mill prices is expected but once the industry has opportunity to appraise the full effect of this hike some upward revisions may be made, depending on general economic conditions at that time. Steel buyers will pay more immediately for their steel in direct proportion to the increase in freight charges. Last week several price adjustments were announced by individual producers. These largely concerned revisions in extras and included both increases and decreases. Electrolytic manganese was reduced, iron ore was raised, a downward revision in extras on stainless steel products was effected, and adjustments were made in coating extras on galvanized sheets and formed roofing. Further easiness has developed in the scrap market with prices definitely down on some grades of material, especially cast. Heavy melting steel is off $2 at Chicago.

COMPOSITES—STEEL's arithmetical price composite for finished steel increased to $97.68 last week, reflecting the advance in tin plate prices which became effective Jan. 1. This compared with $95.50 the preceding week and with $78.05 the like week a year ago. Composites that held unchanged and compared with those for the like 1948 week are: Semi-finished steel, $75.75 and $57.20; steelmaking pig iron, $46.29 and $38.44. Steelmaking scrap composite last week dropped to $42.58 from $43.25 the preceding week and $40.08 a year ago.

STEELWORKS OPERATIONS



DISTRICT STEEL RATES

Percentage of Ingot Capacity engaged in Leading Districts

	Week Ended Jan. 8	Change	Same Week 1948	Same Week 1947
Pittsburgh	96	+ 1.5*	101	98
Chicago	99	None	93	89.5
Eastern Pa.	95	+11.5	92	82
Youngstown	105	None	103	84
Wheeling	90	— 2.5	93.5	89
Cleveland	94.5	— 1.5	89	92
Buffalo	104	None	88.5	90.5
Birmingham	100	None	99	99
New England	85	— 1	80	84
Cincinnati	99	None	86	80
St. Louis	84.5	+ 7	89.5	72.5
Detroit	99	None	90	92
Estimated national rate	99.5	+ 2	97	90

*Revised.

Based on weekly steelmaking capacity of 1,802,476 net tons for 1948; 1,749,928 tons for 1947.

COMPOSITE MARKET AVERAGES

Arithmetical Price Composites*

	Jan. 8	Jan. 1	Month Ago Dec. 1948	Year Ago Jan. 1948	5 Years Ago Jan. 1944
Finished Steel	$97.68	$95.50	$95.50	$78.26	$56.73
Semifinished Steel	75.75	75.75	75.75	60.46	36.00
Steelmaking Pig Iron	46.29	46.29	46.29	38.50	23.00
Steelmaking Scrap	42.58	43.25	43.25	40.75	19.17

FINISHED STEEL WEIGHTED COMPOSITE†

Dec. 1948	4.16150c
Nov. 1948	4.16150c
Oct. 1948	4.16150c
Dec. 1947	3.49055c
Dec. 1943	2.38649c

*** STRAIGHT ARITHMETICAL COMPOSITES:** Computed from average industry-wide mill prices on Finished Carbon Steel (hot-rolled sheets, cold-rolled sheets, cold-rolled strip, hot-rolled bars, plates, structural shapes, basic wire, standard nails, tin plate, standard and line pipe), on Semifinished Carbon Steel (re-rolling billets and slabs, sheet bars, skelp, and wire rods), on Basic Pig Iron (at eight leading producing points), and on Steelworks Scrap (No. 1 melting grade at Pittsburgh, Chicago and eastern Pennsylvania). Steel arithmetical composites, dollars per net ton; pig iron and scrap, gross ton.

† FINISHED STEEL WEIGHTED COMPOSITE: Computed in cents per pound, mill prices, weighted by actual monthly shipments of following products, representing about 82 per cent of steel shipments in the latest month for which statistics are available, as reported by American Iron & Steel Institute: Structural shapes; plates, standard rails; hot and cold-finished carbon bars; black butt weld pipe and tubes; black lap weld pipe and tubes; black electric weld pipe and tubes; black seamless pipe and tubes; drawn wire; nails and staples; tin and terne plate; hot-rolled sheets; cold-rolled sheets; galvanized sheets; hot-rolled strip; and cold-rolled strip. November and December, 1948 figures are preliminary.

COMPARISON OF PRICES

Representative market figures for current week; average for last month, three months and one year ago. Finished material (except tin plate) and wire rods, cents per lb; semifinished (except wire rods) and coke, dollars per net ton, others dollars per gross ton. Delivered prices represent lowest from mills.

Finished Materials

	Jan. 8, 1949	Dec. 1948	Oct. 1948	Jan. 1948
Steel bars, Pittsburgh mills	3.45c	3.45c	3.45c	2.90c
Steel bars, del. Philadelphia	3.79	3.79	3.79	3.348
Steel bars, Chicago mills	3.35	3.35	3.35	2.90
Shapes, Pittsburgh mills	3.275	3.275	3.275	2.80
Shapes, Chicago mills	3.25	3.25	3.25	2.80
Shapes, del. Philadelphia	3.48	3.48	3.48	2.966
Plates, Pittsburgh mills	3.50	3.50	3.50	2.80
Plates, Chicago mills	3.40	3.40	3.40	2.95
Plates, del. Philadelphia	3.71	3.71	3.71	3.186
Sheets, hot-rolled, Pittsburgh mills	3.275	3.275	3.275	2.80
Sheets, cold-rolled, Pittsburgh	4.00	4.00	4.00	3.55
Sheets, No. 10 galv., Pittsburgh	4.40	4.40	4.40	3.90
Sheets, hot-rolled, Gary mills	3.25	3.25	3.25	2.80
Sheets, cold-rolled, Gary mills	4.00	4.00	4.00	3.55
Sheets, No. 10 galv., Gary mills	4.40	4.40	4.40	3.90
Strip, hot-rolled, Pittsburgh mills	3.275	3.275	3.275	2.80
Strip, cold-rolled, Pittsburgh mills	4.375	4.375	4.375	3.55
Bright basic, wire, Pittsburgh	4.325	4.325	4.325	3.675
Wire nails, Pittsburgh mills	5.775	5.775	5.775	4.625
Tin plate, per base box, Pitts. dist.	$6.70	$6.80	$6.80	$5.75

Semifinished

Sheet bars, mill	$67.00*	$67.00*	$67.00*	$53.57
Slabs, Chicago	52.00	52.00	52.00	40.18
Rerolling billets, Pittsburgh	59.00	59.00	59.00	40.18
Wire rod ⅜ to ¼-inch, Pitts. dist.	3.775c	3.775c	3.775c	3.05c

* Nominal.

Pig Iron

	Jan. 8, 1949	Dec. 1948	Oct. 1948	Jan. 1948
Bessemer, del. Pittsburgh (N.&S. sides)	$48.08	$48.08	$48.08	$40.379
Basic, Valley	46.00	46.00	46.00	38.40
Basic, eastern del. Philadelphia	50.17	50.17	50.17	41.372
No. 2 fdry., del. Pgh. (N.&S. sides)	47.58	47.58	47.58	39.879
No. 2 fdry., del. Philadelphia	50.67	50.67	50.67	41.871
No. 2 foundry, Chicago	46.25	46.25	45.13	38.60
No. 2 foundry, Valley	46.50	46.50	43.50	36.50
Southern No. 2 Birmingham	43.38	43.38	43.38	34.88
Southern No. 2 del. Cincinnati	49.09	49.09	49.09	37.74
Malleable, Valley	46.50	46.50	46.50	38.90
Malleable, Chicago	46.50	46.50	45.38	39.10
Charcoal, low phos., fob Lyles, Tenn.	66.00	66.00	66.00	50.00
Ferromanganese, f.o.b. Etna, Pa.	163.00	163.00	163.00	151.00*

* F.o.b. cars Pittsburgh.

Scrap

Heavy melt. steel, No. 1, Pittsburgh	$42.75	$42.75	$42.75	$40.30
Heavy melt. steel, No. 2, E. Pa.	41.50	41.50	41.50	41.30
Heavy melt. steel, No. 1, Chicago	39.75	41.75	41.75	39.05
Heavy melt. steel, No. 1, Valley	42.75	42.75	42.75	40.04
Heavy melt. steel, No. 1 Cleveland	42.25	42.25	42.25	39.75
Heavy melt. steel, No. 1, Buffalo	48.50	48.50	48.15	43.30
Rails for rerolling, Chicago	64.50	70.38	65.50	60.00
No. 1 cast, Chicago	65.50	70.50	70.50	63.50

Coke

Connellsville, beehive furnace	$14.50	$14.50	$14.50	$12.50
Connellsville, beehive foundry	17.00	17.00	17.00	14.60
Chicago, oven foundry, ovens	20.40	20.40	20.40	19.19

FINISHED AND SEMIFINISHED IRON, STEEL PRODUCTS

Finished steel quoted in cents per pound and semifinished in dollars per net ton, except as otherwise noted. Prices apply on an individual producer basis to products within the range of sizes, grades, finishes and specifications produced at its plants.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, open market, $100-$105 per gross ton. Forging quality, $50 per net ton, mill.

Alloy Steel Ingots: $51 per net ton, mill.

Rerolling Billets, Blooms, Slabs: $52 per net ton, mill, except: $62, Conshohocken, Pa.; $66, Monessen, Pa.; sales by smaller interests on negotiated basis at $85 per gross ton, or higher.

Forging Quality Billets, Blooms, Slabs: $61 per net ton, mill, except: $68, Conshohocken, Pa., mill.

Alloy Billets, Slabs, Blooms: Rerolling quality, $63 per net ton, mill except: $70, Conshohocken, Pa.

Sheet Bars: $67 nom., per net ton, mill; sales in open market $110-$115 per gross ton.

Skelp: 3.25c per lb, mill.

Tube Rounds: $76 per net ton, mill; some sellers quoting up to $120 per gross ton.

Wire Rods: Basic and acid open-hearth, 7/32 & ⅜-inch, inclusive, 3.40c per lb, mill, except: 3.65c, Struthers, O.; 3.70c, Worcester, Mass.; 4.05c, Pittsburg, Calif.; 4.10c, Portsmouth, O., Los Angeles; 4.15c Monessen, Pa. One producer quotes 3.90c, Chicago base. Basic open-hearth and bessemer, not resulphurized, 7/32 to 47/64-inch, inclusive, 3.50c, mill.

Bars

Hot-Rolled Carbon Bars (O.H. only) and Bar-Size Shapes under 3-in. (Base 20 tons one size): 3.35c, mill, except: 3.55c, Ecorse, Mich., Pittsburg, Monessen, Aliquippa, Pa.; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, S. San Francisco, Los Angeles, Niles, Calif., Portland, Oreg., Atlanta, Seattle; 4.20c, Kansas City, Mo.; 4.25c, Minnequa, Colo.; 5.30c, Fontana, Calif.

Rail Steel Bars: (Base 10 tons): 3.35c, Moline, Ill., 5.10c, Williamsport, Pa.; another interest quotes 5.35c, mill.

Hot-Rolled Alloy Bars: 3.75c, mill, except: 4.05c, Ecorse, Mich.; 4.80c, Los Angeles; 5.50c, Fontana, Calif.

Hot-Rolled Alloy Bar Shapes: 4.00c, mill.

Cold-Finished Carbon Bars (Base 40,000 lb and over): 4.00c, mill, except: 3.95c, Pittsburgh, Cumberland, Md.; 4.20c, Indianapolis; 4.25c, Monessen, Pa.; 4.30c, Ecorse, Mich.; 4.35c, St. Louis; 4.36c, Plymouth, Mich.; 4.40c, Newark, N. J., Hartford, Putnam, Conn., Mansfield, Readville, Mass.; 4.45c, Camden, N. J.; 5.30c, Los Angeles.

Cold-Finished Alloy Bars: 4.65c, mill, except: 4.75c, Monessen, Pa.; 4.85c, Indianapolis; 4.95c, Worcester, Mansfield, Mass., Hartford.

High-Strength, Low-Alloy Bars: 5.10c, mill, except 5.30c, Youngstown; 5.40c, Ecorse, Mich.

Reinforcing Bars (New Billet): 3.35c, mill, except: 3.55c, Monessen, Pa.; 4.05c, Pittsburg, Torrance, Calif.; 4.10c, Atlanta, Seattle, S. San Francisco, Los Angeles; 4.25c, Minnequa, Colo. Fabricated: To consumers: 4.25c, mill, except: 5.00c, Seattle.

Reinforcing Bars (Rail Steel): 4.65c, Williamsport, Pa., mill; another interest quotes 5.35c, mill.

Wrought Iron Bars: Single Refined: 8.60c, (hand puddled), McKees Rocks, Pa.; 9.50c, Economy, Pa. Double Refined: 11.25c (hand puddled), McKees Rocks, Pa., 11.00c, Economy, Pa. Staybolt: 12.75c, (hand puddled), McKees Rocks, Pa.; 11.30c, Economy, Pa.

Sheets

Hot-Rolled Sheets (18 gage and heavier): 3.25c, mill, except: 3.25-3.30c, Cleveland; 3.30c, Pittsburgh; 3.45c, Ecorse, Mich.; 3.95c, Pittsburg, Torrance, Calif.; 5.00c, Conshohocken, Pa.; 5.65c, Fontana, Calif.; 6.25c, Kansas City, Mo.

Hot-Rolled Sheets (19 gage and lighter, annealed): 4.15c, mill, except: 4.40c, Alabama City, Ala.; 4.65c, Niles, O.; 5.05c, Torrance, Calif., Kokomo, Ind.

Cold-Rolled Sheets: 4.00c, mill, except: 4.20c, Ecorse, Mich.; 4.70c, Granite City, Ill.; 4.95c, Pittsburg, Calif.

Galvanized Sheets, No. 10: (Based on 5 cent zinc) 4.40c, mill, except: 5.00c, Niles, O.; 5.15c, Pittsburg, Torrance, Calif.; 5.30c, Kokomo, Ind.

Galvannealed Sheets: 4.95c, mill, except: 5.05c, Indiana Harbor, Ind.; 5.55c, Niles, O.; 5.70c, Kokomo, Ind.

Culvert Sheets, No. 16 flat Copper Steel (based on 5-cent zinc): 5.00c, mill, except: 5.40c, Granite City, Ill.; 5.45c, Kokomo, Ind.; 5.75c, Pittsburg, Torrance, Calif.

Long Ternes, No. 10 (Commercial quality): 4.80c, mill.

Enameling Sheets, No. 12: 4.40c, mill, except: 4.60c, Granite City, Ill.; 4.70c, Ecorse, Mich.; 6.00c, Niles, O.

Silicon Sheets, No. 24: Field: 5.15c, mill. Armature: 5.45c, mill, except: 5.95c, Warren, O.; 6.05c, Niles, O.

Electrical: Hot-rolled, 5.95c, mill, except: 6.05c, Kokomo, Ind.; 6.15c, Granite City, Ill.; 6.45c, Warren, O.; 6.55c, Niles, O.

Motor: 6.70c mill except: 6.90c, Granite City, Ill.; 7.20c, Warren, O.; 7.95c, Follansbee, W. Va., Toronto, O.; 9.20c, Brackenridge, Pa.

Dynamo: 7.50c, mill, except: 8.65c, Follansbee, W. Va., Toronto, O.; 7.70c, Granite City, Ill.; 10.00c, Brackenridge, Pa.

Transformer 72, 8.05c, mill, except: 9.15c, Follansbee, W. Va., Toronto, O.; 11.80c, Brackenridge, Pa.; **65,** 8.60c, mill, except: 9.85c, Follansbee, W. Va., Toronto, O.; 12.35c, Brackenridge, Pa.; **58,** 9.30c, mill except: 10.55c, Follansbee, W. Va., Toronto, O.; 13.05c, Brackenridge, Pa.; **52,** 10.10c, mill, except: 11.35c, Follansbee, W. Va., Toronto, O.

High-Strength Low-Alloy Sheets: Hot-rolled, 4.95c, mill, except: 5.15c, Youngstown; 5.25c, Ecorse, Mich., and Conshohocken, Pa., mills.

Galvanized (No. 10), 6.75c, mill.

Cold-rolled, 6.05c, mill, except: 6.25c, Youngstown; 6.35c, Ecorse, Mich.

Strip

Hot-Rolled Strip: 3.25c mill, except: 3.30c, Cleveland, Pittsburgh, Riverdale, Ill.; 3.25-3.35c,* Sharon, Pa.; 3.45c, Ecorse, Mich., Atlanta; 3.60c, Detroit; 3.70c, West Leechburg, Pa.; 4.00c, Pittsburg, Torrance, Calif.; 4.25c, Seattle, S. San Francisco, Los Angeles; 4.20c, Kansas City, Mo.; 4.30c, Minnequa, Colo.; 5.90c, Fontana, Calif. One company quotes 4.90c, Pittsburgh base.

* Wider than 6-in. and 6-in. and narrower respectively.

Cold-Rolled Strip (0.25 carbon and less): 4.00c, mill, except 4.00-4.25c, Warren, O.; 4.00-4.50c, Youngstown; 4.20c, Ecorse, Mich.; 4.25c, Riverdale, Ill.; 4.40-4.50c, Detroit; 4.50c, New Haven, Corn., West Leechburg, New Castle, Pa., Boston; 4.75c, Dover, O., New Kensington, Pa.; 4.50-5.00c, Trenton, N. J.; 4.80-5.05c, Wallingford, Conn.; 5.75c, Los Angeles; 7.10c, Fontana, Calif. One company quotes 4.55c, Cleveland or Pittsburgh base, and 4.75c, Worcester, Mass., base; another, 5.00c, Pittsburgh base.

Cold-Finished Spring Steel: 0.26-0.40 C, 4.00c, mill, except: 4.25c, Dover, O., Chicago; 4.30c, Worcester, Mass.; 4.50c, New Castle, Pa., Boston, Youngstown; 4.75c, Wallingford, Conn. Over 0.40 to 0.60 C, 5.50c, mill, except: 5.65c, Chicago; 5.75c, Dover, O.; 5.80c, Worcester, Mass., Wallingford, Conn., Trenton, N. J.; 5.95c, Boston; 6.00c, New Castle, Pa. Over 0.60 to 0.80 C, 6.10c, mill, except: 6.25c, Chicago; 6.35c, Dover, O.; 6.40c, Worcester, Mass., Wallingford, Bristol, Conn., Trenton, N. J.; 6.60c, New Castle, Pa. Over 0.80 to 1.05 C, 8.05c, mill, except: 7.85c, Dover, O.; 8.20c, Chicago; 8.35c, Worcester, Mass., Bristol, Conn., Trenton, N. J. Over 1.05 to 1.35 C, 10.35c, mill, except: 10.15c, Dover, O.; 10.30c, Wallingford, Conn.; 10.50c, Chicago; 10.65c, Worcester, Mass., Trenton, N. J.

Cold-Rolled Alloy Strip: 9.50c, mill except: 9.80c, Worcester, Mass.

High-Strength, Low-Alloy Strip: Hot-rolled, 4.95c, mill, except: 5.15c, Youngstown; 5.25c, Ecorse, Mich., mill. Cold-rolled, 6.05c, mill, except: 6.25c, Youngstown; 6.35c, Ecorse Mich., mill.

Tin, Terne Plate

Tin Plate: American Coke, per base box of 100 lb, 1.25 lb coating $7.50-$7.70; 1.50 lb coating $7.75-$7.95. Pittsburg, Calif., mill $8.25 and $8.50, respectively, for 1.25 and 1.50 lb coatings.

Electrolytic Tin Plate: Per base box of 100 lb, 0.25 lb tin, $6.45-$6.65; 0.50 lb tin, $6.70-$6.90; 0.75 lb tin, $7.00-$7.20.

Can Making Black Plate: Per base box of 100 lb, 55 to 128 lb basis weight $5.75-$5.85. Pittsburg, Calif., mill, $6.50.

Holloware Enameling Black Plate: 29-gage, 5.30c per pound, except: 5.40c, Sparrows Point, Md.; 5.50c, Granite City, Ill.

Manufacturing Ternes (Special Coated): Per base box of 100 lb, $6.65, except: $6.75 Fairfield, Ala., Sparrows Point, Md.

Roofing Ternes: Per package 112 sheets; 20 x 28 in., coating I.C. 8-lb, $15.50.

Plates

Carbon Steel Plates: 3.40c, mill, except: 3.40-3.60c, Cleveland; 3.45c, Sparrows Point, Md., Johnstown, Pa., Lackawanna, N. Y.; 3.60c, Pittsburgh; 3.65c, Ecorse, Mich.; 3.75c, Coatesville, Pa.; 3.95c, Claymont, Del., Conshohocken, Pa.; 4.30c, Seattle, Minnequa, Colo.; 4.56c, Houston, Tex.; 5.80c, Fontana, Calif.; 6.50c, Harrisburg, Pa.; 6.25c, Kansas City, Mo.

Floor Plates: 4.55c, mill.

Open-Hearth Alloy Plates: 4.40c, mill, except: 5.10c, Coatesville, Pa., mill.

High-Strength, Low-Alloy Plates: 5.20c mill, except: 5.10c, Coatesville, Pa.; 5.30c, Conshohocken, Pa., Sparrows Point, Md., Johnstown, Pa.; 5.40c, Youngstown; 5.65c, Ecorse, Mich., Sharon, Pa.

Shapes

Structural Shapes: 3.25c, mill, except: 3.30c, Bethlehem, Pa., Lackawanna, N. Y., Johnstown, Aliquippa, Pa.; 3.85c, Torrance, Calif.; 4.15c, Minnequa, Colo.; 4.30c, Seattle, S. San Francisco, Los Angeles; 5.75c, Fontana, Calif.

Alloy Structural Shapes: 4.05c, mill.

Steel Sheet Piling: 4.05c, mill.

High-Strength, Low-Alloy Shapes: 4.95c, mill, except: 5.05c, Bethlehem, Johnstown, Pa., Lackawanna, N. Y.; 5.15c, Youngstown.

Wire and Wire Products

Wire to Manufacturers (carloads): Bright, Basic or Bessemer Wire, 4.15c, mill, except: 4.25c, Sparrows Point, Md., Kokomo, Ind.; 4.45c, Worcester, Mass.; 4.50c, Monessen, Pa.; Minnequa, Colo., Atlanta, Buffalo; 4.70c, Portsmouth, O.; 4.80c, Palmer, Mass.; 5.10c, Pittsburg, Calif.; 5.15c, S. San Francisco; 5.40c, Shelton, Conn. One producer quotes 4.50c, Chicago base; another, 4.50c, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Basic MB Spring Wire, 5.55c, mill, except: 5.30c, Portsmouth, O.; 5.65c, Sparrows Point, Md., Monessen, Pa.; 5.85c, Worcester, Palmer, Mass., Trenton, N. J.; 6.50c, Pittsburg, Calif.

Upholstery Spring Wire, 5.20c mill, except: 5.30c, Sparrows Point, Md., Williamsport, Pa.; 5.50c, Worcester, Mass., Trenton, N. J., New Haven, Conn.; 6.15c, Pittsburg, Calif.

Wire Products to Trade (carloads): Merchant Quality Wire: Annealed (6 to 8 Gage base), 4.80c, mill, except: 4.90c, Sparrows Point, Md.; 4.95c, Monessen, Pa.; 5.10c, Worcester, Mass.; 5.15c, Minnequa, Colo., Kokomo, Ind.; 5.20c, Atlanta; 5.75c, S. San Francisco, Pittsburg, Calif. One producer quotes 5.15c, Chicago and Pittsburgh base; another, 5.20c. Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Galvanized (6 to 8 Gage base), 5.25c, mill, except: 5.35c, Sparrows Point, Md.; 5.40c, Monessen, Pa.; 5.55c, Worcester, Mass.; 5.60c, Kokomo, Ind., Minnequa, Colo.; 5.65c, Atlanta; 6.20c, Pittsburgh, S. San Francisco, Calif. One producer quotes 5.60c, Pittsburgh and Chicago base; another, 5.65c, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Nails and Staples: Standard, cement-coated and galvanized nails and polished and galvanized staples, Column 103, mill, except: 105, Sparrows Point, Md., Kokomo, Ind.; 109 Worcester, Mass.; 110 Minnequa, Colo., Atlanta; 117, Portsmouth, O.; 123, Pittsburg, Calif.; 124, Cleveland; 126, Monessen, Pa.; $6.75 per 100 pound keg, Conshohocken, Pa., Wheeling, W. Va. One producer quotes column 109, Chicago and Pittsburgh base; another, column 113, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Woven Fence (9 to 15½ Gage, inclusive): Column 109, mill, except: 113, Monessen, Pa., Kokomo, Ind.; 116, Minnequa, Colo.; 121 Atlanta; 132, Pittsburg, Calif. One producer quotes column 113, Pittsburgh and Chicago base; another column 114, Crawfordsville, Ind., freight equalized with Pittsburgh and Birmingham.

Barbed Wire: Column 123 mill, except: 125, Sparrows Point, Md., Kokomo, Ind.; 126, Atlanta; 128, Monessen, Pa.; 130, Minnequa, Colo.; 143, Pittsburg, Calif.; 145, S. San Francisco. One producer quotes 127, Chicago and Pittsburgh base.

Fence Posts (with clamps): Column 114, Duluth; 115, Johnstown, Pa.; 116, Moline, Ill.; 122, Minnequa, Colo.; $123.50 per net ton, Williamsport, Pa.

Bale Ties (single loop): Column 106, mill, except: 108, Sparrows Point, Md., Kokomo, Ind.; 110, Atlanta; 113 Minnequa, Colo.; 130, S. San Francisco, Pittsburg, Calif. One producer quotes column 115, Crawfordsville, Ind., freight equalized with Birmingham and Pittsburgh.

Stainless Steels

(Mill prices, cents per pound)

CHROMIUM NICKEL STEELS

Type No.	Bars, Wire Shapes	Strip, Cold-Rolled	Sheets
301	28.50-28.75	30.50-32.00	37.50-40.75
302	28.50-28.75	33.00-33.75	37.50-40.75
303	31.00-31.50	36.50-39.75	39.50-43.00
304	30.00-31.25	35.00-35.75	39.50-43.00
316	46.00-48.00	55.00-57.25	53.00-57.25
347	38.50-39.75	48.50-50.25	50.00-54.00
STRAIGHT CHROMIUM STEELS			
410	22.75-23.00	26.50-27.00	32.00-33.00
416	23.25-23.50	28.25-33.50	32.50-33.50
430	23.25-23.50	27.00-27.50	34.75-35.50
446	32.50-33.00	60.00-62.25	46.50-50.00

STAINLESS-CLAD STEELS

	Plates —Cladding— 10%	Plates —Cladding— 20%	Sheets —Cladding— 10%	Sheets —Cladding— 20%
302	....	....	19.75	21.50
304	22.50	26.50	20.75	22.50
310	32.50	36.50	....	....
316	27.00	31.00	26.00	28.00
321	23.50	27.50	....	....
347	25.00	29.00	24.00	26.00
405	18.75	24.75	....	....
410	18.25	24.25	....	....
430	18.25	24.25	....	....

Tool Steels

Tool Steel: Cents per pound, producing plants; reg. carbon 19.00c; extra carbon 22.00c; special carbon 26.50c; oil-hardening 29.00c; high carbon-chromium 52.00c; chrome hot work, 29.00c.

W	Cr	V	Mo	Co	Base Per lb
18	4	1	...	...	90.50c
18	4	2	...	...	102.50c
18	4	3	...	...	114.50c
18	4	2	...	9	168.50c
1.5	4	1	8.5	...	65.00c
6.4	4.5	1.9	5	...	69.50c
6	4	3	6	...	88.00c

Tubular Goods

Standard Steel Pipe: Mill prices in carlots, threaded and coupled, to consumers about $200 a net ton.

In.	Butt Weld Blk.	Gal.	In.	Butt Weld Blk.	Gal.
⅛	39½-	8½-	1	46-	25-
	41½	12½		48½	27½
¼	37½-	9½-	1¼	46½-	25½-
	39½	14		49	28
⅜	34-	4½-	1½	47-	26-
	36	9		49½	28½
½	40½-	18-	2	47½-	26½-
	43	21½	2½, 3	48-	27-
¾	43½-	22-		50½	29½
	46	24½	3½ & 4	44½	22½

In.	Lap Weld Blk.	Lap Weld Gal.	Elec. Weld Blk.	Elec. Weld Gal.	Seamless Blk.	Seamless Gal.
2	39½	17½	38½	16½	27-	5-
					38½	17
2½	42½-	20½-	41½	19½	32½-	10½-
	43½	21½			41½	20
3	42½-	20½-	41½	19½	35-	13-
	43½	21½			41½	20
3½&4	42½-	20½-	43½	21½	38½-	16½-
	46½	24½			43½	22
5 & 6	42½-	20½-	43½	21½	38½-	16½-
	44½	22½			43½	22
7	....	....	....	....	43½	20½

Line Steel Pipe: Mill prices in carlots to consumers about $200 a net ton.

In.	Butt Weld Blk.	Butt Weld Gal.	In.	Butt Weld Blk.	Butt Weld Gal.
⅛	40½	....	1¼	46-	26-
¼	38½	....		48	27
⅜	35	....	1½	46½-	26½-
½	40-	18½-		48½	27½
	42	19½	2	47-	26½-
¾	43-	22½-		49	28
	45	23½	2½ & 3	47½-	27-
1	45½-	25½-		49½	28½
	47½	26½	3½ & 4	43½	....

In.	Lap Weld Blk.	Lap Weld Gal.	Elec. Weld Blk.	Elec. Weld Gal.	Seamless Blk.	Seamless Gal.
2	38½	16½	37½	15½	26-	4-
					37½	16
2½	42½	20½	40½	19½	31½-	9½-
					40½	19
3	42½	20½	40½	19½	34-	12-
					40½	19
3½-4	41½-	20-	42½	20½	37½-	15½-
	45½	23½			42½	21
5 & 6	41½-	20	42½	20½	37½-	15½-
	43½				42½	21
8	45½	....	44½	21½-	40½-	17½-
				22	44½	22
10	45	....	44	21-	41½-	18½-
				21½	44	21½
12	44	....	43	20	40½-	17½-
					43	20½

Standard Wrought Iron Pipe: Mill price in carlots, threaded and coupled, to consumers about $200 a net ton.

In.	Butt Weld Blk.	Butt Weld Gal.	In.	Lap Weld Blk.	Lap Weld Gal.
⅜	+59½	+95½	1¼	+22	+53
½	+20½	+52½	1½	+15½	+45½
¾	+10½	+41½	2	+ 7½	+36½
1 and			2½-3½	+ 5	+32
1¼	+ 4½	+32½	4	List	+26
1½	— 1½	+29	4½-8	+ 2	+27½
2	— 2	+28½	9-12	+12	+37

Boiler Tubes: Net base c.l. prices, dollars per 100', mill; minimum wall thickness, cut lengths 4 to 24'; inclusive.
(Following prices on seamless boiler tubes raised 10% by Babcock & Wilcox Tube Co. as of Nov. 22.)

O.D. In.	B.W. Ga.	Seamless Hot Rolled	Seamless Cold Drawn	Elec. Weld Hot Rolled	Elec. Weld Cold Drawn
1	13	....	13.39	13.00	13.00
1¼	13	....	15.87	13.21	15.39
1½	13	$15.05	17.71	14.60	17.18
1¾	13	17.11	20.15	16.60	19.54
2	13	19.18	22.56	18.60	21.89
2¼	12	23.54	27.70	22.83	26.88
2½	12	25.79	30.33	25.02	29.41
2¾	12	27.38	32.14	26.51	31.18
3	12	28.68	33.76	27.82	32.74
3¼	11	33.39	39.29	32.39	38.11
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

Pipe, Cast Iron: Class B, 6-in. and over, $93.50 per net ton, Birmingham; $106.70, del. Chicago; 4-in. pipe, $5 higher; Class A pipe, $5 a ton over Class B.

Rails, Supplies

Rails: Standard, over 60-lb; $3.20 per 100 lb. mill, except: $3.50, Indiana Harbor, Ind., and Minnequa, Colo.

Light (billet): $3.55 per 100 lb, mill, except: $4.25, Minnequa, Colo.

Light (rail steel): $5.10 per 100 lb,, Williamsport, Pa.

Railroad Supplies: Track bolts, treated: $8.50 per 100 lb, mill. Untreated: $8.25, mill.

Tie Plates: 4.05c mill, except: 4.20c, Pittsburg, Calif.; 4.50c, Seattle.

Spike Bars: 4.25c, mill.

Standard Spikes: 5.35c, mill, except: 5.25c, Pittsburgh.

Axles: 5.20c, mill.

RAW MATERIAL AND FUEL PRICES

Minimum delivered prices do not include 3 per cent federal tax.

Pig Iron

Per gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa., furnace	$48.00	$48.50	$49.00	$49.50
Newark, N. J., del.	50.39	50.89	51.39	51.89
Brooklyn, N. Y., del.	....	52.40	52.90	....
Philadelphia, del.	50.17	50.67	51.17	51.67
Birmingham, furnace	42.88	43.38	....	....
Cincinnati, del.	....	49.09	....	....
Buffalo, furnace	*47.00	*47.00	*47.50	48.00
Boston, del.	55.42	55.42	55.92	....
Rochester, del.	49.22	49.22	49.72	50.22
Syracuse, del.	50.025	50.025	50.525	41.025
§**Chicago,** district furnaces ..	46.00	46.00-46.50	46.50	47.00
Milwaukee, del.	47.72	47.72-48.22	48.22	48.72
Muskegon, Mich., del.	....	50.98-51.48	51.48	....
Cleveland, furnace	46.00	46.50	46.50	47.00
Akron, del.	48.17	48.67	48.67	49.17
Lone Star, Tex., furnace	....	†75.00	....	....
Duluth, furnace	....	46.50	46.50	47.00
Erie, Pa., furnace	46.00	46.50	46.50	47.00
Everett, Mass., furnace	....	52.75	53.25	....
Geneva, Utah, furnace	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	53.63	....	....
Portland, Oreg., del.	....	53.63	....	....
Los Angeles, San Francisco.	53.13	53.63	....	....
Granite City, Ill., furnace ...	47.90	48.40	48.90	....
St. Louis, del.	48.65	49.15	49.65	....
Ironton, Utah, furnace	....	46.50	....	....
‡**Neville Island, Pa.,** furnace.	46.00	46.50	46.50	47.00
Pittsburgh, del., N.&S. Sides	47.08	47.58	47.58	48.08
Pittsburgh (Carnegie), furnaces	46.00	....	....	47.00
Sharpsville, Pa., furnace	46.00	46.50	46.50	47.00
Steelton, Pa., furnace	48.00	48.50	49.00	49.50
Struthers, O., furnace	42.50	....	....	....
Swedeland, Pa., furnace	50.00	50.50	51.00	....
Toledo, O., furnace	46.00	46.50	46.50	47.00
Cincinnati, del.	50.55	51.05	....	....
Youngstown, O., furnace	46.00	46.50	46.50	47.00
Mansfield, O., del.	49.87	50.37	50.37	50.87

* Republic Steel Corp. quotes $1 a ton higher for basic, No. 2 foundry and malleable at Buffalo.

† Low phosphorus southern grade.

‡ To Neville Island base add: $0.86 for McKees Rocks, Pa.; $1.31 Lawrenceville, Homestead, McKeesport, Monaca; $1.73 Verona; $1.94 Brackenridge; $1.08 for Ambridge and Aliquippa.

§ Includes, in addition to Chicago, South Chicago, Ill., East Chicago, Gary and Indiana Harbor, Ind.

Blast Furnace Silvery Pig Iron

6.00-6.50 per cent Si (base).$59.50
6.51-7.00.. 60.75 9.01- 9.50. 67.00
7.01-7.50.. 62.00 9.51-10.00. 68.25
7.51-8.00.. 63.25 10.01-10.50. 69.50
8.01-8.50.. 64.50 10.51-11.00. 70.75
8.51-9.00.. 65.75 11.01-11.50. 72.00

F.o.b. Jackson, O., per gross ton. Buffalo furnace $1.25 higher.

Bessemer Ferrosilicon

Prices same as for blast furnace silvery iron, plus $1 per gross ton.

Electric Furnace Silvery Pig Iron Si 14.01-14.50%, $84.75 furnace, Niagara Falls; $84 open-hearth and $85 foundry grade, Keokuk, Iowa. Add $1 a ton for each additional 0.5% Si to 18%; 50c for each 0.5% Mn over 1%; $1 a ton for 0.45% max. phos.

Charcoal Pig Iron

Semi-cold blast, low phosphorus. F.o.b. furnace, Lyles, Tenn. ..$66 (For higher silicon iron a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Low Phosphorus

Steelton, Pa., $54; Buffalo, Troy, N. Y., $50; Philadelphia, $56.81 delivered.

Intermediate phosphorus, Central furnace, Cleveland, $51.

Differentials

Prices are subject to following differentials:

Silicon: An additional charge of 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge of 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Fluorspar

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.

Metallurgical Coke

Price per Net Ton

Beehive Ovens

Connellsville, furnace..	$13.50-15.50
Connellsville, foundry..	16.00-18.00
New River, foundry....	16.50
Wise county, foundry..	15.35
Wise county, furnace..	14.60

Oven Foundry Coke

Kearney, N. J., ovens..	$21.50
Chicago, ovens	20.40
Chicago, del.	†21.75
Detroit, del.	23.95
Terre Haute, ovens....	21.00
Milwaukee, ovens	21.15
Indianapolis, ovens ...	20.85
Chicago, del.	24.00
Cincinnati, del.	23.50
Detroit, del.	24.40
Ironton, O., ovens ...	19.40
Cincinnati, del.	21.50
Painesville, O., ovens..	20.90
Buffalo, del.	23.25
Cleveland, del.	22.46
Erie, del.	22.57
Birmingham, ovens ..	17.70
Philadelphia, ovens ...	20.55
Swedeland, Pa., ovens.	20.50
Portsmouth, O., ovens.	19.50
Detroit, ovens	20.65
Detroit, del.	*21.65
Flint, del.	22.85
Pontiac, del.	21.91
Saginaw, del.	23.15

Includes representative switching charge of: *, $1; †, $1.35.

Coal Chemicals

Spot, cents per gallon, ovens

(Price effective as of Aug. 5)

Pure benzol	20.00
Toluol, one degree	20.50-26.50
Toluol, two degrees ...	23.00-26.50
Industrial xylol	20.50-26.50

Per ton bulk, ovens

Sulphate of ammonia	$45.00

Per pound, ovens

(Effective as of Oct. 1)

Phenol, 40 (carlots, returnable drums)	13.50
Do., less than carlots	14.25
Do., tank cars	12.50

(Effective as of Oct. 25)

Naphthalene flakes, balls, bbl to jobbers, "household use"	13.75

Refractories

(Prices per 1000 brick, f.o.b. plant)

Fire Clay Brick

Super Duty: St. Louis, Vandalia, or Farber, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., $100.

High-Heat Duty: Salina, Pa., $85; Woodbridge, N. J., St. Louis, Farber, or Vandalia, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., $80.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky.; Athens, or Troup, Tex., Stevens Pottery, Ga., or Portsmouth, O., $74.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Pa., Bessemer, Ala., $66.

Ladle Brick

Dry Press: $55, Freeport, Merill Station, Clearfield, Pa.; Chester, New Cumberland, W. Va.; Irondale, Wellsville, O.

Wire Cut: $53, Chester, New Cumberland, W. Va.; Wellsville, O.

Malleable Bung Brick

St. Louis, Mo., Olive Hill, Ky., $90; Beach Creek, Pa., $80.

Silica Brick

Mt. Union, Claysburg, or Sproul, Pa., Ensley, Ala., $80; Hays, Pa. $85; Joliet or Rockdale, Ill., E. Chicago, Ind., $89; Lehi, Utah, Los Angeles, $95.

Eastern Silica Coke Oven Shapes: Claysburg, Mt. Union, Sproul, Pa., Birmingham, $80.

Illinois Silica Coke Oven Shapes: Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $81.

Basic Brick

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Chrome brick or chemical-bonded chrome brick, $69, magnesite brick, $91; chemical-bonded magnesite, $80.

Magnesite

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; Bulk, $30.50-31.00; single paper bags, $35.00-35.50.

Dolomite

(Base prices per net ton)

Domestic, dead-burned bulk: Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Nario, Millersville, Martin, Gibonsburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural) Lower Lake Ports

(Any increase or decrease in R. R. freight rates, dock handling charges and taxes thereon effective after Dec. 31, 1948, are for buyer's account.)

Old range bessemer.....	$7.60*
Old range nonbessemer	7.45*
Mesabi bessemer	7.35*
Mesabi nonbessemer	7.20*
High phosphorus	7.20*

* Established in 1949 contracts by at least one leading seller.

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56.62% contract	15.25

Foreign Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68% ..	15.00
Brazil iron ore, 68-69% ...	19.50

Tungsten Ore

Wolframite and scheelite per short ton unit, duty paid	$26-$28

Manganese Ore

48-50%, duty paid, f.o.b. cars, New York, Philadelphia, Baltimore, Norfolk, Va., Mobile, Ala., New Orleans, 67.60c-72.60c.

Chrome Ore

Gross ton f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S.C., plus ocean freight differential for delivery to Portland, Oreg., and/or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African

48% 2.8:1	$37.50
48% 3:1	39.00
48% no ratio	31.00

South African (Transvaal)

44% no ratio .....$25.50-$26.00	
45% no ratio	26.50
48% no ratio 29.00-30.00	
50% no ratio 29.50-30.50	

Brazilian—nominal

44% to 2.5:1 lump	$33.65

Rhodesian

45% no ratio .....$27-$27.50	
48% no ratio	30.00
48% 3:1 lump	39.00

Domestic (seller's nearest rail)

48% 3:1	$39.00

Molybdenum

Sulphide conc., lb, Mo., cont., Mines	$0.75

WAREHOUSE STEEL PRICES

Prices, cents per pound, for delivery within switching limits, subject to extras.

	SHEETS			STRIP		BARS				PLATES	
	H-R 10 Ga.	C-R 17 Ga.	Gal. *10 Ga.	†H-R	†C-R	H-R Rds. ⅜" to 3"	C-F Rds. ½" & up	H-R Alloy **4140	Standard Structural Shapes	Carbon ⅜"-¾"	Floor ⅜" & Thicker
Boston (city)	5.84	6.64	7.84	6.04	6.90	5.69	6.39	8.24-9.74	5.54	5.89	7.34
Boston (c'try)	5.69	6.49	7.69	5.89	6.75	5.54	6.24	8.09-9.59	5.39	5.74	7.19
New York (city)	5.73-5.80	6.73	7.74-7.83	6.08-6.28	...	5.73	6.58	8.67	5.52-5.78	5.98	7.48
New York (c'try)	5.53-5.60	6.53	7.54-7.63	5.88-6.08	...	5.53	6.38	...	5.32-5.58	5.78	7.28
Phila. (city)	5.50-5.86	6.61-6.81	7.47-7.67	5.46-5.81	...	5.57-5.65	6.31	8.39	5.24-5.40	5.52-5.65	6.73-7.16
Phila. (c'try)	5.35-5.71	6.46-6.66	7.32-7.52	5.31-5.66	...	5.42-5.50	6.16	8.24	5.09-5.25	5.37-5.50	6.58-7.01
Balt. (city)	5.43†	6.33	7.23	5.49	...	5.54	...	...	5.48	5.68	7.13
Balt. (c'try)	5.28†	6.18	7.08	5.34	...	5.39	...	...	5.33	5.53	6.98
Norfolk, Va.	5.75	...	...	...	...	6.00	7.00	...	6.00	6.00	7.50
Wash. (w'hse)	5.81-5.97	...	...	5.87	...	5.88-5.92	6.58	...	5.82-5.86	6.02-6.06	7.47-7.51
Buffalo (del.)	5.00	5.90	7.80	5.71	6.50	5.20	6.05	10.10	5.25	5.50	7.06
Buffalo (w'hse)	4.85	5.75	7.65	5.56	6.35	5.05	5.90	9.95	5.10	5.35	6.91
Pitts. (w'hse)	4.85-5.00§	5.75-5.85[8]	7.15-7.70	5.00-5.35	5.95-6.00	4.90-5.10	5.65	7.65	4.90-5.15	5.05-5.25	6.55
Detroit (w'hse)	4.85-5.00§	5.75-5.85[8]	7.15	5.00-5.35	5.95-6.00	5.45	6.17	8.12	5.45	5.65-5.80	7.10
Cleveland (del.)	5.13-5.90‡‡	5.90-6.29	7.34-8.00‡‡	5.17-5.69	6.45-6.85	5.30-5.35	6.05-6.10	8.24-8.54	5.34-5.60	5.50-5.55	6.95-7.00
Cleve. (w'hse)	4.98-5.75	5.75-6.14	7.19-7.85	5.02-5.54	6.30-6.70	5.15-5.20	5.90-5.95	8.09-8.39	5.19-5.45	5.35-5.40	6.80-6.85
Cincin. (w'hse)	5.26	6.11	7.60	5.52	6.07	5.52	6.07	...	5.37	5.61	6.91
Chicago (city)	5.00-5.20	5.90‡[8]	7.30	5.00	6.64-6.80	5.05	5.85	8.25[9]	5.05	5.25	6.70
Chicago (w'hse)	4.85-5.05	5.75‡[8]	7.15	4.85	6.49-6.65	4.90	5.70	8.10[9]	4.90	5.10	6.55
Milwaukee (city)	5.37	6.07‡[8]	7.47	5.17	6.81-6.97	5.22	6.02	8.42[9]	5.22	5.42	6.87
St. Louis (del.)	5.34§	6.24[8]	7.44	5.34	6.64	5.39	6.19[12]	6.64	5.39	5.59	7.04
St. L. (w'hse)	5.19§	6.09[8]	7.29	5.19	6.49	5.24	6.04[12]	9.49	5.24	5.44	6.89
Birm'ham (city)	5.20§	...	6.60	5.20	...	5.15	6.66	...	5.15	5.40	7.41-7.66
Birm'ham (c'try)	5.05§	...	6.45	5.05	...	5.00	6.51	...	5.00	5.25	7.26-7.51
Omaha, Nebr.	6.07	...	9.33	6.07	...	6.12	6.92	...	6.12	6.32	7.77
Los Ang. (city)	6.55§	8.05	8.20†	6.75	9.50	6.20	8.00-8.50	...	6.70	6.40	8.15
L. A. (w'hse)	6.40§	7.90	8.05†	6.60	9.35	6.05	7.85-8.35	...	6.55	6.25	8.00
San Francisco	5.95[21]	7.15	8.05	6.75[21]	8.25[18]	5.90[21]	7.55	10.20‡‡	5.90	7.60	8.10
Seattle-Tacoma	6.35[17]	7.90[5]	8.40	6.70[17]	...	6.20[17]	8.15[1]	9.45[2]	6.30[17]	6.35[17]	8.40[17]

Base Quantities: 400 to 1999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold finished bars, 1000 lb and over; galvanized sheets, 450 to 1499 lb; [1]—1500 lb and over; [2]—1000 to 4999 lb; [3]—450 to 39,999 lb; [4]—three to 24 bundles; [5]—450 to 1499 lb; [6]—400 to 14,999 lb; [8]—400 to 1499 lb; [9]—1000 to 1999 lb; [11]—1000 to 39,999 lb; [12]—1000 lb and over; [16]—2000 lb and over; [17]—300 to 999 lb; [18]—1500 to 1999 lb; [19]—1500 to 39,999 lb; [20]—400 to 3999 lb; [21]—400 lb and over; [22]—500 to 1499 lb; [23]—Price (but not other price in range) applies to any and all quantities.

* Includes gage and coating extra, except Birmingham (coating extra excluded); † does not include gage extras; ‡ 15 gage; § 18 gage and heavier; ** as rolled; †† add 0.40 for sizes not rolled in Birmingham; ‡‡ top level of quoted range is nominal.

Bolts, Nuts

Prices to consumers, f.o.b. midwestern plants. Sellers reserve right to meet competitors' prices, if lower. Additional discounts on carriage and machine bolts, 5 for carloads; 15 for full containers, except tire and plow bolts.

Carriage and Machine Bolts

½-in. and smaller ; up to 6 in. in length.	35 off
⅝ and ⅝ x 6-in. and shorter	37 off
¾-in. and larger x 6-in. and shorter	34 off
All diameters longer than 6-in.	30 off
Tire bolts	25 off
Plow bolts	47 off
Lag bolts, 6 in. and shorter	37 off
Lag bolts, longer than 6 in.	35 off

Stove Bolts

In packages, nuts separate, 58½-10 off; bulk 70 off on 15,000 of 3-in. and shorter, or 5000 over 3 in., nuts separate.

Nuts

	A.S. Light	A.S. f.o.b. Reg. and Heavy
Semifinished hexagon		
⅞-in. and smaller	41 off	.....
½-in. and smaller	.....	38 off
½-in.-1-in.	39 off	.....
⅛-in.-1-in.	.....	37 off
1⅛-in.-1½-in.	37 off	35 off
1⅝-in. and larger	34 off	28 off

Additional discount of 15 for full containers.

Hexagon Cap Screws (Packaged)

Upset 1-in. smaller by 6-in. and shorter (1020 bright)	46 off
Upset (1035 heat treated)	
⅝ and smaller x 6 and shorter	40 off
⅞, ⅞, & 1 x 6-in. and shorter	35 off

Square Head Set Screws

Upset 1-in. and smaller	51 off
Headless, ¼-in. and larger	31 off

Rivets

F.o.b. midwestern plants

Structural ½-in. and larger	6.75c
⅞-in. and under	48 off

Washers, Wrought

F.o.b. shipping point, to jobbers..Net to $1 off

FERROALLOY PRODUCT PRICES

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si) Carlot per gross ton, $57, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $160 per gross ton of alloy, c.l., packed, $172; gross ton lots, packed, $187; less gross ton lots, packed, $204; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price; $165, Rockwood, Tenn.; $162, f.o.b. Birmingham and Johnstown, Pa., furnaces; $160, Sheridan, Pa.; $163, Aetna, Pa. Shipment from Pacific Coast warehouses by one seller add $31 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $201; less gross ton lots, $218 f.o.b. Chicago. Add or subtract $2 for each 1%, or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 0.75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal: (Mn 96% min., Fe 2% max., Si 1% max., C 0.20% max.). Carload, 2" x D, packed 35.5c per lb of metal, ton lot 37c, less ton 39c. Delivered. Spot, add 2c.

Manganese, Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 35,999 lb, 30c; 36,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound. F.o.b. cars Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.6c per lb of alloy, carload packed, 9.35c, ton lot 10.25c, less ton 11.25c. Freight allowed. For 2% C grade, Si 15-17.5%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 20.5c per lb of contained Cr, c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered, Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., SMxD, bulk 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lot 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract, carload, 1" x D; packed, max. 0.50% C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

(*Please turn to Page 124*)

Metal Price Tone Remains Firm

Consumers continue to seek larger tonnages of major nonferrous metals than are available. Suspension of copper and zinc import duties are proposed in Congress

New York — Trading in major nonferrous metals last week showed no change from that of recent months. Price tone was firm with suppliers unable to satisfy demands fully.

Copper—The strike in Utah copper properties remained stalemated, but producers continue to quote 23.50c for electrolytic despite the reduction in available supplies.

Representative Patterson of Connecticut, has introduced a bill to continue until Mar. 31, 1951, the suspension of the 4 cents per pound import tax on copper. The present law, suspending the copper duty, expires Mar. 31, 1949. The import tax on copper is 4 cents a pound, but under the Geneva Trade Agreement the United States excise tax on copper imports was halved so that it would be two cents at the expiration of the present suspension bill.

Zinc—Due to the pending increase in freight rates, delivered prices of metals will advance. On zinc moving from St. Louis to the eastern markets the rise will amount to about $1 per ton.

Lead — Producers are analyzing requests for February deliveries and will open books for that month as soon as adjustments can be made to balance demand with available supplies. Prices held at 21.30c to 21.35c. St. Louis.

A bill providing for the suspension of the import duty on zinc and zinc concentrates has been introduced by Representative J. E. Van Zandt of Pennsylvania. The bill would suspend the duty for two years from the time of enactment. The present duty on zinc ores and concentrates is 3/4-cent a pound; on zinc in stabs, blocks or pigs, 7/8-cent. These rates were scheduled to become 1.20 cents and 1.40 cents, respectively, 30 days after presidential proclamation ending the national emergency.

Receipts of lead in ore and scrap by smelters declined 3600 tons during November due to a sharp drop in receipts of foreign ore.

As of Jan. 1, the price of lead rose £11 per ton in England to the equivalent of 22.10c for foreign metal and 23.37c for English lead. Zinc advanced £18 in Australia to the equivalent of 5.76c, U. S. currency.

Copper Supplies To Gain

New York—Outlook appears good for a continued high rate of copper consumption in 1949, and for adequate supplies and stable prices, said C. Donald Dallas, chairman Revere Copper & Brass Inc., in his year-end review.

"This is the picture that evolved in the final few weeks of 1948," he said. "For a time, because of the strike in Utah affecting some of the highest producing mines, a premium market for copper scrap began to develop and it appeared possible that the price of refined copper would be advanced. Then apprehension among buyers abated; optimism was felt concerning the settlement of the strike and the longer term considerations pointing to greater supply in the months ahead became more widely appreciated.

"The strike came at a time when the copper market was in a state of tension brought about by the resumption of government stockpiling. As against releases of stockpiled metal in the previous year, and continuing on a minor scale even into 1948, the authorities began to take about 10,000 tons of copper monthly out of the market. This is a relatively small quantity, less than 10 per cent of fabricators' average monthly consumption, but the supply-demand situation was so closely in balance, without reserve stocks, that the impact on the market was severe.

"For the full year of 1948, refinery production on a world-wide basis, because of the strike in the United States, did not greatly exceed the 2,213,000 tons of 1947 output.

"Because of the expanding needs of the market, United States imports rose 30 per cent, but without cancelling the deficit in supply. . . . Current consumption by United States fabricators is about double the prewar rate. This increase is not to be considered entirely a temporary phenomenon, although of course it is influenced by the high rate of postwar business activity. Higher copper consumption is attributable also to wider uses of the metal and to expanding population.

"In foreign countries, particularly those participating in the operations of the Economic Cooperation Administration, use of copper is still under prewar rates. Ultimately ECA encouragement should mean more copper consumption by Europe, but evidently this is to be a gradual development.

"Against relatively stable demand, which may in fact increase in some parts of the world, there is a limitation of supply by difficulties of a technical nature. Copper mines have now operated at or near capacity for a number of years, and the development or extension of ore bodies has been neglected. In addition, mining and transportation equipment in many areas, is inadequate

"However, for a number of reasons it appears likely that supplies will be higher in 1949, assuming the settlement of the strike here and no new labor difficulties of magnitude.

"ECA measures to encourage foreign production should begin to show results. This agency, through the supply of mining and transportation equipment to areas of need, notably Africa, can make more copper available both to the participating countries and the United States. These short-term measures can be supported by others whose effect will be longer in developing.

"Contracts placed with foreign countries, it now appears, may be relied upon for a substantial part of the needs of the 1949 stockpiling program. Any measures such as contracts of this character which tend to encourage foreign production will tend to increase the supply available to the United States, whether for military or industrial purposes."

Extends Tin Controls 6 Months

Washington — Present tin conservation of the Department of Commerce will continue essentially unchanged through June 30, 1949, H. B. McCoy, director, Office of Domestic Commerce, said in announcing certain modifications in Orders M-81 and M-43.

Order M-81, which restricts the use of tin in can making by individual manufacturers to one half their tin plate receipts in 1947, was extended through June 3, 1949.

The order states that, in distributing their products, manufacturers will be expected to:

Make adequate provision for the food pack; make equitable distribution among and within the various groups of can users, including consideration for small business and hardship cases and reasonable provisions for newcomers.

Mr. McCoy said the continuation of the conservation measure should not affect the volume of cans available for food processing nor result in any shortages.

Order M-43 has been revised, effective as of Jan. 1. First quarter allocations on other than tinplate will be based on 27-1/2 per cent of the total pig tin allocated during the calendar year 1948, in order to bring the distribution pattern of pig tin in line with actual current usage. Previously allocations were based on the second quarter of 1946. Pig tin allocations for the production of tin plate are based on a fixed tonnage.

There will be no increase in the total quantity of pig tin available for distribution during the first six months of 1949 over that which was available during the comparable period of 1948. Any receipts of pig tin in excess of the amount set up for allocation will be made available for addition to the strategic stockpile.

Aside from minor changes in form and text for clarification purposes, the following changes have been made in Order M-43:

1. The basis for permitting importation of tin alloys, previously described in a press release on Aug. 5, 1948, has been made a part of the order.

2. The order makes the certification requirements procedure mandatory for all items covered in the schedules of the order.

3. The use of up to 7 per cent tin in aluminum alloy bearings is now permitted under Schedule I.

4. The optional use of 0.50 lb and heavier electrolytic tin plate for hot dipped tin plate under Schedule V has been included in order to encourage the use of the more economical tin plate where such substitution is practicable and, at the same time, allowing greater flexibility in the material available for the manufacture of hot-dipped tin plate items.

NONFERROUS METAL PRICES

(Cents per pound, carlots, except as otherwise noted)

Copper: Electrolytic, 23.50c, Conn. Valley; Lake, 23.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 21.50-22.00c; 88-10-2 (No. 215) 31.00c; 80-10-10 (No. 305) 27.25c; No. 1 yellow (No. 405) 17.50c.

Zinc: Prime western 17.50c, brass special 17.75c, intermediate 18.00c, East St. Louis; high grade 18.50c, delivered.

Lead: Common 21.30-21.35c, chemical and corroding 21.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, fob shipping point, freight allowed.

Secondary Aluminum: Piston alloy (No. 122 type) 26.50-27.00c; No. 12 foundry alloy (No. 2 grade 25.75-26.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 28.00-30.00c; grade 2, 26.75-27.50c; grade 3, 25.75-26.25c; grade 4, 25.25-25.50c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb. and over, 20.50c, fob Freeport, Tex.

Tin: Grade A, 99.8% or higher (including Straits) $1.03; grade B, 99.8% or higher, not meeting specifications for grade A, with 0.05% max. arsenic, $1.028; grade C, 99.65-99.79%, incl., $1.024; 99.5-99.649% $1.024, grade F, 98-98.999% $1.015 for tin content. Prices are ex-dock, New York, in 5-ton lots.

Antimony: American 99-99.8% and over but not meeting specifications below, 38.50c; 99.8% and over (arsenic 0.05% max.; other impurities, 0.1% max.) 39.00c, f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; shot nom.; "XX" nickel shot, 43.50c; "F" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York $90-$97 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2 del.; special or patented shapes, $2.10.

Cobalt: 97-98%, $1.65 per lb for 550 lb (keg); $1.67 per lb for 100 lb (case); $1.72 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 70.00c per ounce.

Platinum: $89-$93 per ounce.

Palladium: $24 per troy ounce.

Iridium: $110-$115 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 37.18; yellow brass 34.59; commercial bronze, 95%, 37.23; 90%, 36.88; red brass, 85%, 36.01; 80%, 35.66; best quality, 35.33; nickel silver, 18%, 46.92; phosphor-bronze, grade A, 5%, 56.05.

Rods: Copper, hot rolled 33.28; cold drawn 34.28; yellow brass, free cutting, 38.16; commercial bronze, 95% 36.92; 90% 36.57; red brass, 85% 35.70; 80% 35.35.

Seamless Tubing: Copper 37.22; yellow brass 37.60; commercial bronze 90% 39.54; red brass 85% 38.92; 80% 38.57.

Wire: Yellow brass 34.88; commercial bronze, 95% 37.52; 90% 37.17; red brass, 85% 36.30; 80% 35.95; best quality brass 35.62.

Copper Wire: Bare, soft, fob eastern mills, c.l. 29.42½c, l.c.l. 29.92½-30.05c; weatherproof, fob eastern mills, c.l. 29.60-29.85c, l.c.l. 30.35c; magnet, delivered, c.l. 32.75-33.50c, 15,000 lb or more 33.00-33.75c, l.c.l. 33.50-34.25c.

ALUMINUM

Sheets and Circles: 2S and 3S mill finish c.l. (Two producers quote 1-cent per pound lower.)

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.076-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0 038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-20	36.8	33.4	39.5
0.008-0.0075	12-20	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	——Hexagonal—— R317-T4	17S-T4
0.125	48.0	...	...
0.156-0.203	41.0	...	...
0.219-0.313	38.0	...	...
0.344	37.0	...	47.0
0.375	36.5	45.5	44.0
0.406	36.5	...	...
0.438	36.5	45.5	44.0
0.469	36.5	...	...
0.500	36.5	45.5	44.0
0.531	36.5	...	...
0.563	36.5	...	41.5
0.594	36.5	...	...
0.625	36.5	43.0	41.5
0.656	36.5	...	...
0.688	36.5	...	41.5
0.750-1.000	35.5	40.5	39.0
1.063	35.5	...	37.5
1.125-1.500	34.5	39.0	37.5
1.563	34.5	...	37.5
1.625	33.5	...	36.5
1.688-2.000	33.5	...	...
2.125-2.500	32.5	...	...
2.625-3.375	31.5	...	...

LEAD

(Prices to jobbers, fob Cleveland, Pittsburgh)
Sheets: Full rolls, 140 sq ft or more, $27.25 per cwt.; add 50c per cwt., 10 sq ft to 140 sq ft. **Pipe:** Full coils, $27.25 per cwt; cut coils, $27.50. **Traps and Bends:** List price plus 80%.

ZINC

Sheets, 22.00-22.50c, fob mill, 36,000 lb and over. Ribbon zinc in coils, 20.75-21.50c, fob mill, 36,000 lb and over. Plates, not over 12-in., 19.75-20.50c; over 12-in., 20.75-21.50c.

NICKEL

(Base prices, fob mill)
Sheets, cold-rolled, 60.00c. Strip, cold-rolled 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, fob mill.)
Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c. Seamless tubes, 80.00c. Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb, 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb., 35.00-36.00c.

DAILY PRICE RECORD

	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Nov. Avg.	23.50	21.325	16.580	103.00	17.00	38.50	40.00	73.655
Dec. Avg.	23.50	21.325	17.50	103.00	17.00	38.50	40.00	70.00
Jan. 3-6	23.50	21.30-21.35	17.50	103.00	17.00	38.50	40.00	70.00

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum, primary ingots, 99%, del.; Antimony, bulk, fob Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery, unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plating Materials

Chromic Acid: 99.9%, flake, fob Philadelphia, carloads, 26.00c; 5 tons and over 26.50c; 1 to 5 tons, 27.00c; less than 1 ton, 27.50c.
Copper Anodes: Base, 2000 to 5000 lb; fob shipping point, freight allowed: Flat untrimmed 33.84c; oval 33.34c; electrodeposited, 31.09c; cast, 30.12c.
Copper Cyanide: 70-71% Cu, 100-lb drums, 46.00c, fob Niagara Falls, N. Y.
Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 16.00c; 1000 to 19,900 lb, 15.00c, fob Niagara Falls, N. Y.
Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 26.25c; over 250 lb, 25.25c, fob Cleveland.
Nickel Anodes: Rolled oval, carbonized, carloads, 56.00c; 10,000 to 30,000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 10 lb, 64.00c; fob Cleveland. Add 1 cent for rolled depolarized.
Nickel Chloride: 100-lb kegs, 26.50c; 275-lb, or 500-lb bbl, 24.50c, fob Cleveland, freight allowed on barrels, or 3 or more kegs.
Tin Anodes: Bar, 1000 lb and over 119.00c; 500 to 999 lb, 119.50c; 200 to 499 lb, 120.00c; less than 200 lb, 121.50c; ball, 1000 lb and over, 121.25c; 500 to 999 lb, 121.75c; 200 to 499 lb, 122.25c; less than 200 lb, 123.75c fob Sewaren, N. J.
Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 71.8c; 100 or 300 lb drums only, 100 to 500 lb, 63.6c; 600 to 1900 lb, 61.2c; 2000 to 9900 lb, 59.4c. Prices fob Sewaren, N. J. Freight not exceeding St. Louis rate allowed. F.o.b. Carteret, N. J., prices 0.3c higher.
Zinc Cyanide: 100-lb drums 39.25c, fob Cleveland; 39.00c, Detroit; 38.00c, fob Philadelphia.
Stannous Sulphate: Less than 2000 lb, in 100 lb kegs, 100.00c, in 400 lb bbl, 99.00c; more than 2000 lb, in 100 lb kegs, 99.00c, in 400 lb bbl, 98.00c, f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb fob shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.125	21.125	20.375
Yellow brass	18.875	18.625	18.125
Commercial Bronze			
95%	20.250	20.000	19.500
90%	20.125	19.875	19.375
Red brass			
85%	20.000	19.750	19.250
80%	19.875	19.625	19.125
Best Quality (71-79%)	19.750	19.500	19.000
Muntz Metal	18.250	18.000	17.500
Nickel, silver, 10%...	20.250	20.000	10.000
Phos. bronze, A.....	22.625	22.375	21.375
Naval brass	18.750	18.500	18.000
Manganese bronze ...	18.750	18.500	17.875

BRASS INGOT MAKERS BUYING PRICES

(Cents per pound, fob shipping point, carload lots)
No. 1 copper 19.50-20.00, No. 2 copper 18.50-19.00, light copper 17.50-18.00, composition red brass 16.50-16.75, auto radiators 14.00-14.25, heavy yellow brass 12.25-12.75.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)
No. 1 copper 20.50-20.87½, No. 2 copper 19.50-19.87½, light copper 18.50-18.87½, refinery brass (60% copper), per dry copper content 18.50-18.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots or more)
Copper and Brass: Heavy copper and wire No. 1 18.50-19.00, No. 2 17.50-18.00, light copper 16.50-17.00, No. 1 composition red brass 14.50-15.00, No. 1 composition turnings 14.00-14.50, mixed brass turnings 8.75-9.00, new brass clippings 15.75-16.25, No. 1 brass rod turnings 12.75-13.25, light brass 8.75-9.25, heavy yellow brass 11.00-11.25, new brass rod ends 13.25-13.75, auto radiators, unsweated 12.75-13.00, cocks and faucets 12.25-12.50, brass pipe 12.75-13.25.
Lead: Heavy 18.50-19.00, battery plates 13.00-13.25, linotype and stereotype 19.50-20.00, electrotype 18.50-19.00, mixed babbitt 19.50-20.00, solder joints, 23.00-24.00.
Zinc: Old zinc 10.00-10.50, new die cast scrap 9.50-10.00, old die cast scrap 6.75-7.25.
Tin: No. 1 pewter 65.00-67.00, block tin pipe 83.00-84.00, No. 1 babbitt 51.00-54.00, siphon tops 50.00-52.00.
Aluminum: Clippings 2S 16.50-17.00, old sheets 13.00-13.50, crankcase 13.00-13.50, borings and turnings 6.50-7.00, pistons, free of struts, 13.00-13.50.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

PITTSBURGH

No. 1 Heavy Melt. Steel	$42.50-43.00*
No. 2 Heavy Melt. Steel	42.50-43.00*
No. 1 Busheling	42.50-43.00*
Nos. 1, 2 Bundles	42.50-43.00
No. 3 Bundles	40.50-41.00
Machine Shop Turnings	37.50-38.00
Mixed Borings, Turnings	37.50-38.00
Short Shovel Turnings	38.00-39.00
Cast Iron Borings	38.00-39.00
Bar Crops and Plate	49.00-50.00
Low Phos. Steel	49.50-50.00
Heavy Turnings	39.50-40.00

Cast Iron Grades

No. 1 Cupola	63.00-64.00†
Machinery Cast	69.00-70.00†
Charging Box Cast	59.00-60.00†
Heavy Breakable Cast.	58.00-59.00†
Malleable	72.00-73.00†
Brake Shoe	55.50-56.00†

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.50-44.00
R.R. Malleable	75.00-80.00
Axles	55.25-56.25
Rails, Rerolling	59.00-60.00
Rails, Random Lengths	56.00-57.00
Rails, 3 ft and under.	60.00-61.00
Rails, 18 in. and under	61.50-62.00
Railroad Specialties	56.00-57.50†
Uncut Tires	54.50-55.00
Angles, Splice Bars	53.00-54.00

*Plus applicable freight springboard. †Dealers' offering prices.

CLEVELAND

No. 1 Heavy Melt. Steel	$42.00-42.50*
No. 2 Heavy Melt. Steel	42.00-42.50*
No. 1 Busheling	42.00-42.50*
Nos. 1 & 2 Bundles	42.00-42.50*
Machine Shop Turnings	37.00-37.50
Mixed Borings, Turnings	36.50-38.50
Short Shovel Turnings.	38.00-38.50
Cast Iron Borings	38.00-38.50
Bar Crops and Plate	47.00-47.50
Punchings & Plate Scrap	47.00-47.50
Heavy Turnings	42.00-43.00
Alloy Free Turnings	40.00-41.00
Cut Structurals	48.50-51.50

Cast Iron Grades

No. 1 Cupola	71.00-72.00
Charging Box Cast	58.00-60.00
Stove Plate	65.00-67.00
Heavy Breakable Cast.	55.00-57.00
Unstripped Motor Blocks	55.00-57.00
Malleable	75.00-78.00
Brake Shoes	53.00-55.00
Clean Auto Cast	70.00-73.00
No. 1 Wheels	64.00-66.00
Burnt Cast	59.00-61.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00*
R.R. Malleable	79.00-81.00
Rails, Rerolling	62.00-68.00
Rails, Random Lengths	60.00-61.00
Rails, 3 ft and under.	63.00-66.00
Cast Steel	55.00-57.00
Railroad Specialties	58.00-60.00
Uncut Tires	58.00-59.00
Angles, Splice Bars	61.00-63.00

* Plus applicable freight springboard on earmarked material.

VALLEY

No. 1 Heavy Melt. Steel	$42.50-43.00*
No. 2 Heavy Melt. Steel	42.50-43.00
No. 1 Bundles	42.50-43.00
Machine Shop Turnings	37.00-39.00
Short Shovel Turnings.	39.00-39.50
Cast Iron Borings	38.50-39.00
Low Phos.	48.50-50.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00*

* Plus applicable freight springboard.

MANSFIELD

Machine Shop Turnings	$37.50-38.00
Short Shovel Turnings.	39.50-40.00

CINCINNATI

No. 1 Heavy Melt. Steel	$42.00
No. 2 Heavy Melt. Steel	42.00
No. 1 Busheling	42.00
Nos. 1 & 2 Bundles	42.00
Machine Shop Turnings	36.00
Mixed Borings, Turnings	36.00
Short Shovel Turnings.	38.00
Cast Iron Borings	37.00

Cast Iron Grades

No. 1 Cupola Cast	63.00
Charging Box Cast	53.00
Heavy Breakable Cast.	59.00
Stove Plate	55.00
Unstripped Motor Blocks	56.00
Brake Shoes	50.00
Clean Auto Cast	63.00
Drop Broken Cast	71.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00
R.R. Malleable	75.00
Rails, Rerolling	62.00
Rails, Random Lengths	58.00
Rails, 18 in. and under	63.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$37.50-38.00
No. 1 Busheling	37.50-38.00
Nos. 1 & 2 Bundles	37.50-38.00
No. 3 Bundles	37.50-38.00
Machine Shop Turnings	31.50-32.00
Mixed Borings, Turnings	31.50-32.00
Short Shovel Turnings.	32.50-33.00
Cast Iron Borings	32.50-33.00
Punchings & Plate Scrap	42.50-43.00

Cast Iron Grades

No. 1 Cupola Cast	60.00-65.00
Heavy Breakable Cast.	54.00-59.00
Clean Auto Cast	60.00-65.00

BUFFALO

No. 1 Heavy Melt. Steel	$48.00-49.00
No. 2 Heavy Melt. Steel	41.75-42.25
No. 1 Busheling	41.75-42.25
Nos. 1 & 2 Bundles	41.75-42.25
Machine Shop Turnings	39.50-40.00
Mixed Borings, Turnings	39.50-40.00
Cast Iron Borings	39.50-40.00
Short Shovel Turnings.	40.50-41.00
Low Phos	49.00-51.00

Cast Iron Grades

No. 1 Cupola	67.00-68.00
Mixed Cupola	63.00-65.00
Heavy Breakable Cast.	55.00-57.00
Malleable	70.00-75.00
Clean Auto Cast	70.00-72.00

Railroad Scrap

Rails, 3 ft. and under.	59.00-61.00
Railroad Specialties	58.00-60.00

PHILADELPHIA

No. 1 Heavy Melt. Steel	$45.00-45.50
No. 2 Heavy Melt. Steel	41.50
No. 1 Busheling	41.50
Nos. 1 & 2 Bundles	41.50
No. 3 Bundles	39.50
Machine Shop Turnings	37.50
Mixed Borings, Turnings	37.50
Short Shovel Turnings.	41.00-41.50
Bar Crop and Plate	48.00-49.00
Punchings & Plate Scrap	48.00-49.00
Cut Structurals	48.00-49.00
Elec. Furnace Bundles.	47.00-48.00
Heavy Turnings	45.50-46.50
No. 1 Chemical Borings.	41.00-41.50

Cast Iron Grades

No. 1 Cupola Cast	60.00-61.00
No. 1 Machinery Cast.	63.00-64.00
Charging Box Cast	59.00-60.00
Heavy Breakable Cast.	59.00-60.00
Unstripped Motor Blocks	57.50
Malleable	78.00-79.00
Clean Auto Cast	60.00-61.00
No. 1 Wheels	65.00-66.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$39.00
No. 2 Heavy Melt. Steel	37.00
No. 1 Busheling	37.00
Nos. 1 & 2 Bundles	37.00
No. 3 Bundles	35.00
Machine Shop Turnings	29.00-29.50
Mixed Borings, Turnings	29.00-29.50
Short Shovel Turnings.	30.00-31.50
Punching & Plate Scrap	41.00-42.00
Cut Structurals	41.00-42.00
Elec. Furnace Bundles.	41.00-42.00

Cast Iron Grades

No. 1 Cupola Cast	56.00
Charging Box Cast	56.00
Heavy Breakable	55.00-56.00
Unstripped Motor Blocks	52.50-53.50
Malleable	68.00-69.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$38.90
No. 2 Heavy Melt. Steel	34.40
No. 1 Bundles	34.40
No. 1 Busheling	34.40
Machine Shop Turnings	29.90
Mixed Borings, Turnings	29.90
Short Shovel Turnings.	31.90
Bar Crops and Plate	40.00-41.00
Punching & Plate Scrap	40.00-41.00
Chemical Borings	37.00-38.00

Cast Iron Grades

No. 1 Cupola Cast	60.00-65.00
Heavy Breakable Cast.	52.00-53.00
Stove Plate	54.00-55.00
Unstripped Motor Blocks	50.00-52.00
Clean Auto Cast	54.00-56.00

CHICAGO

No. 1 Heavy Melt. Steel	$39.50-40.00
No. 2 Heavy Melt. Steel	39.50-40.00
No. 1 Bundles	41.50-42.00
No. 2 Bundles	39.50-40.00
No. 3 Bundles	39.50-40.00
Machine Shop Turnings	34.50-35.00
Mixed Borings, Turnings	34.50-35.00
Short Shovel Turnings.	36.50-37.00
Cast Iron Borings	35.50-36.00
Bar Crops and Plate	45.00-46.00
Punchings	45.00-46.00
Elec. Furnace Bundles	44.00-45.00
Heavy Turnings	40.50-41.00
Cut Structurals	44.50-45.00

Cast Iron Grades

No. 1 Cupola Cast	65.00-66.00
Clean Auto Cast	65.00-66.00
No. 1 Wheels	60.00-62.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00
Malleable	76.00-77.00
Rails, Rerolling	64.00-65.00
Rails, Random Lengths	54.00-55.00
Rails, 3 ft. and under.	57.00-58.00
Rails, 18 in. and under	60.00-61.00
Railroad Specialties	48.00-49.00
Angles, Splice Bars	52.50-54.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$44.00-45.00
No. 2 Heavy Melt. Steel	40.00-41.00
Machine Shop Turnings	35.00-36.00
Short Shovel Turnings.	36.50-37.50

Cast Iron Grades
(F.o.b. shipping point)

No. 1 Cupola Cast	63.00-65.00
Mixed Cast	56.00-58.00
Heavy Breakable Cast.	59.00-60.00
Brake Shoes	58.00-59.00
Clean Auto Cast	65.00-67.00
Burnt Cast	59.00-60.00

Railroad Scrap

R.R. Malleable	71.00-72.00
Rails, Rerolling	63.00-65.00
Rails, Random Lengths	56.00-59.00
Rails, 3 ft. and under.	60.00-61.00
Uncut Tires	51.00-52.00
Angles, Splice Bars	54.00-56.00

BIRMINGHAM

No. 1 Heavy Melt. Steel	$39.50
No. 2 Heavy Melt. Steel	39.50
No. 1 Busheling	39.50
Nos. 1 & 2 Bundles	39.00
No. 3 Bundles	37.00
Long Turnings	24.50
Short Shovel Turnings.	26.00-27.00
Cast Iron Borings	25.00
Bar Crops and Plate	40.00
Cut Structurals	38.50

Cast Iron Grades

No. 1 Cupola Cast	nom.
Stove Plate	60.00-62.00
No. 1 Wheels	59.00-61.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	38.00
R.R. Malleable	nom.
Axles, Steel	50.00
Rails, Rerolling	53.00-55.00
Rails, Random Lengths	45.00-48.00
Rails, 3 ft. and under.	53.00-55.00
Angles and Splice Bars	52.00-53.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	*$27.50
No. 2 Heavy Melt. Steel	*27.50
No. 1 Busheling	*27.50
Nos. 1 & 2 Bundles	*27.50
No. 3 Bundles	*24.50
Machine Shop Turnings	*18.00
Bar Crops and Plate	*27.50
Cast Steel	*27.50
Alloy Free Turnings	*18.00
Cut Structurals	*27.50

Cast Iron Grades

No. 1 Cupola Cast	50.00-65.00

Railroad Scrap

No. 1 Heavy Melting	*28.50
Axles	*34.00
Rails, Random Lengths	*29.00

*F.o.b. California shipping point.

SEATTLE

No. 1 Heavy Melt. Steel	$29.00-30.00
No. 2 Heavy Melt. Steel	29.00-30.00
No. 1 Busheling	29.00-30.00
Nos. 1 & 2 Bundles	29.00-30.00
No. 3 Bundles	24.50
Machine Shop Turnings	21.00-22.50
Mixed Borings, Turnings	21.00-22.50
Punching & Plate Scrap	35.00
Cut Structurals	26.00-28.00

Cast Iron Grades

No. 1 Cupola Cast	50.00
Heavy Breakable Cast	35.00
Stove Plate	30.00
Unstripped Motor Blocks	32.50
Malleable	40.00
Brake Shoes	35.00
Clean Auto Cast	40.00
No. 1 Wheels	37.50-40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	28.50
Railroad Malleable	30.00
Rails, Random Lengths	30.00-32.00
Angles and Splice Bars	28.50

LOS ANGELES

No. 1 Heavy Melt. Steel	$27.50
No. 2 Heavy Melt. Steel	27.50
Nos. 1 & 2 Bundles	27.50
Machine Shop Turnings	20.00
Mixed Borings, Turnings	15.50-16.00
Punchings & Plate Scrap	33.00-36.00

Cast Iron Grades

No. 1 Cupola Cast	45.00-50.00

HAMILTON, ONT.

(Ceiling prices, delivered)

Heavy Melt.	$23.00
No. 1 Bundles	23.00
Mechanical Bundles	21.00
Mixed Steel Scrap	19.00
Mixed Borings, Turnings	17.00
Rails, Remelting	23.00
Rails, Rerolling	26.00
Bushelings	17.50
Bushelings, new factory, prep'd	21.00
Bushelings, new factory, unprep'd	16.00
Short Steel Turnings	17.00

Cast Iron Grades*

No. 1 Cast	48.00-50.00
No. 2 Cast	44.00-45.00

* Removed from price control Aug. 9, 1947; quoted on basis of f.o.b. shipping point.

MODEL 150-TC
Triple Compression Hydraulic Baling Press for bulky sheet metal scrap . . . with cutaway view of pit and foundation.

ONE ANSWER to the Long-Range Scrap Shortage

Proper classification and baling of all available sheet metal scrap can go a long way toward relieving the long-range scrap shortage. Reduced to dense, compact bales of proper size — sheet metal scrap is extremely valuable raw material for the steel mills.

You can contribute to the *continued expansion* of iron- and steel-making capacity by planning *now* for *future baling* of your sheet metal scrap. At the same time, you can reap the benefits of a most profitable operation in your plant.

NEWS OF INDUSTRY

Long-Term Scrap Shortage Seen As Bar To Huge Steel Expansion

Those Demanding Big Program Said to Ignore Quantities Of Scrap Required

It is estimated that only about a fourth of the 20 million gross tons of the scrap bought by steel mills last year was industrial scrap —that generated in industry as a waste product of steel fabricating. This leaves almost 15 million tons of purchased scrap that originated because things wore out or became obsolete. Of this about 2 million

Reprinted from The Iron Age of June 10, 1948

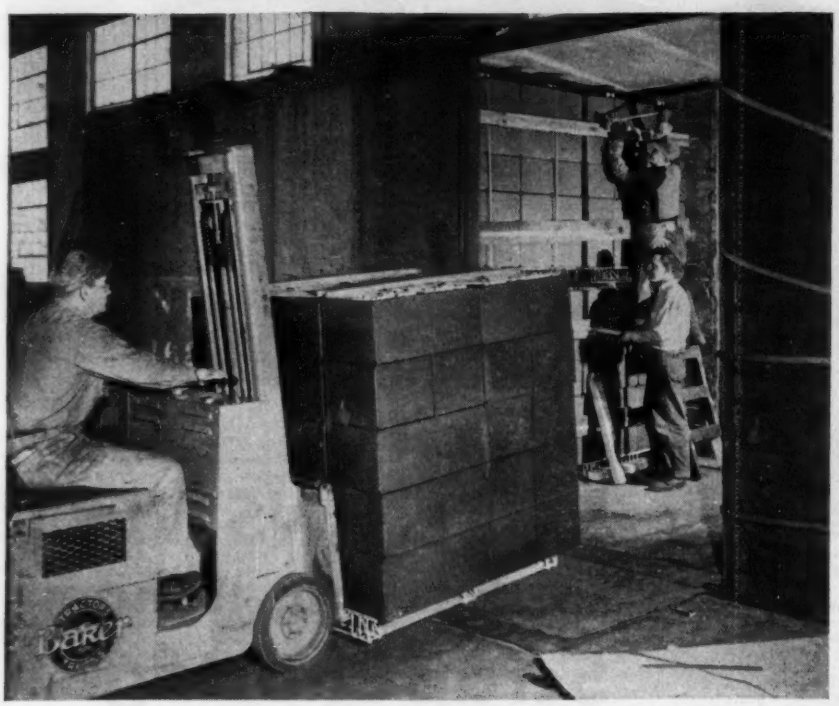
GALLAND-HENNING MFG. CO.
2747 S. 31st STREET MILWAUKEE 7, WISCONSIN

GALLAND-HENNING

SCRAP METAL BALING PRESSES

A 5473-1P

BAKER
Light-weight FORK TRUCK helps Charles T. Brandt Inc. set a production record!



This company recently completed and shipped 140,000 special metal container units in 70 days. The job comprised 18,480,000 operations to produce assemblies from 3,080,000 separate pieces converted from 5,000,000 pounds of sheet steel . . . Making this record required on-the-dot assembly line coordination of production processes—plus *packing on pallets* and *loading into box cars* for shipment on schedule.

The handling problem involved loading several cars per day with pallet loads double-decked—each pallet load weighing approximately 1400 lbs. A Baker FQH Fork Truck was in almost constant use.

The estimated man-power saving in storing, transporting and loading was about 6 men over manual methods. In fact, it would have been virtually impossible to accomplish this record by purely manual handling.

See us at the 3rd National Material Handling Exposition, Philadelphia, Jan. 10-14, 1949.

BAKER INDUSTRIAL TRUCK DIVISION *of The Baker-Raulang Co.*
1259 West 80th Street • Cleveland 2, Ohio
In Canada: Railway and Power Engineering Corporation, Limited

Baker INDUSTRIAL TRUCKS

Wire . . .

Pittsburgh Steel and Bethlehem revise certain extras on wire and wire products

Wire Prices, Page 101

Pittsburgh — An extra of 25 cents per 100 pounds for chain quality wire and wire rods has been adopted by Pittsburgh Steel Co., effective Jan. 3. Previously there was no extra for chain quality. The company also has revised its extra for cold heading quality wire and wire rods. This price move involves dividing this extra into two classifications as follows: Carbon max. of 0.20 and under, 50 cents per 100 pounds; over 0.20 carbon, $1. Formerly a charge of 50 cents for cold heading quality was applicable throughout the entire carbon range.

Bethlehem Steel Co. has increased the extra for galvanized nails and miscellaneous wire nails and brads 25 cents per 100 pounds to $3.05 for No. 15 gage and heavier, and a like amount to $3.55 for lighter than 15 gage. This price adjustment was made to compensate for higher cost of zinc. No change was made in price for bright wire. Company also has increased galvanizing extras for low-carbon manufacturing wire; Silver Star spring wire; MB high carbon wire; rope wire; ACSR wire; oval fence wire; and paper clip wire.

Adjustment in Bethlehem Steel Co.'s base prices for galvanized merchant trade products are as follows: Galvanized merchant trade wire, 6 to 8 gage base, up 15 cents to $5.40, Sparrows Point.

Galvanized stone wire, 16 gage base, up 30 cents per 100 pounds, to $10.85, Johnstown, and $10.95, Sparrows Point.

Galvanized fence, 9 to 15-1/2 gage, inclusive, per roll, advanced $3 to column 112, in carloads, straight or mixed, Johnstown.

Galvanized barbed wire advanced $3 to column 126 at Johnstown; 128 at Sparrows Point.

Boston — Although some shifts in product emphasis are foreseen, no appreciable decline in overall demand for wire is expected in the near future. Diversity in wire production and requirements will tend to maintain operations. Screw producers are getting some rod tonnage, but tend to buy a higher ratio of finished wire than formerly. Needs are heaviest in small and middle size ranges.

Birmingham — Weather conditions have resulted in some slackening of demand for certain wire products, mainly fencing and nails. The condition, however, is purely temporary and seasonal and reports indicate no general improvement.

High-Tensile Steel Prices Up

Pittsburgh—Youngstown Sheet & Tube Co. advanced its "Yoloy" high-tensile steel prices $4 per ton across the board. Similar action has not yet been reported by other producers. Sheet & Tube Co.'s current prices are as follows: Hot-rolled sheets and strip, $5.15 per 100 pounds; plates, $5.40; cold-rolled sheets and strip, $6.25; hot-rolled bars and bar shapes, $5.30; and structural shapes, $5.15.

For a holiday that's really unusual, visit this unique resort blessed with an invigorating, health-building climate. Near Las Vegas is gigantic Hoover Dam, an unforgettable spectacle . . . also amazing Death Valley, a delightful oasis in colorful desert land surroundings.

Stop at Las Vegas en route to or from Los Angeles. There's a variety of Streamliner and other fine service from Chicago, St. Louis and Kansas City. You'll enjoy a restful ride over Union Pacific's smooth roadbed, plus excellent meals and service.

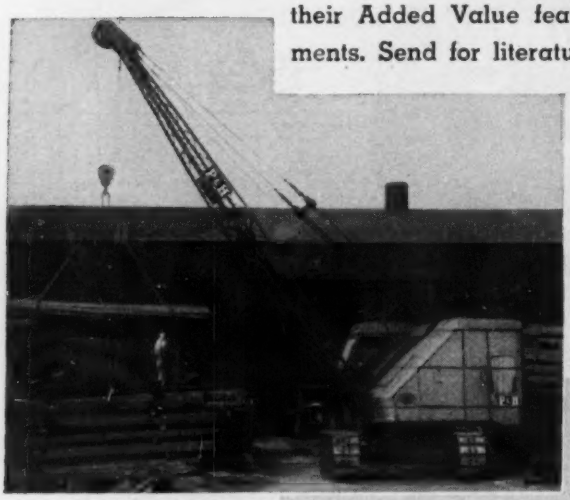
Write Union Pacific Railroad, Omaha 2, Nebraska, for information regarding Las Vegas.

UNION PACIFIC RAILROAD

Road of the Streamliners

P&H Crawler Cranes do yard jobs FASTER, SAFER, AT A SAVING!

Have you the handling efficiency outside your plant that you have inside? P&H Crawler Cranes can give you fast, flexible, versatile yard service with one-man operation — to speed materials handling. P&H Crawler Cranes with their Added Value features are wise investments. Send for literature!

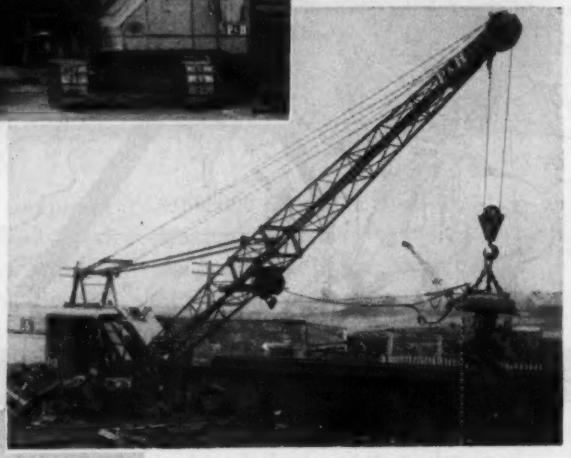


CRAWLER

P&H Crawler Cranes are easy to operate because of P&H's smooth, responsive hydraulic control. You can operate them in close quarters because of P&H's exclusive and simplified method of steering and braking.

MAGNET

Equipped with magnet, the P&H Crawler Crane loads scrap quickly. For those countless lifting jobs in plant yards, you can make no better choice than a P&H. Its construction of rolled alloy steels means extra long, trouble-free service.



CLAMSHELL

Bulk materials are moved speedily and easily with a P&H Crawler clamshell and movement is not restricted to inplace trackage. In addition P&H clear-view, all-weather cabs permit year-round operation.

P&H INDUSTRIAL CRAWLER CRANES
4411 West National Avenue
Milwaukee 14, Wis.
HARNISCHFEGER CORPORATION

There's a P&H Industrial Crawler Crane to Meet Your Requirements. Write Today for Bulletins!

Sheets, Strip . . .

Sheet Prices, Page 100

New York — Except for the silicon grade and alloy specialties, sheet demand continues strong. Some consumers, due to a falling off in demand for their products, are not pressing quite so hard for tonnage, but in general supply continues far short of requirements. No important cancellations have been noted in this district, but producers are confident that if any did develop they would have no difficulty in placing the tonnage elsewhere.

In silicon sheets there has been a noticeable easing, due primarily to reduction in requirements for small fractional horsepower motors. One leading producer this past week opened books for April. This seller is switching from a quarterly to a monthly basis in setting up consumer quotas. Stainless steel sheets can still be had before the end of this quarter, although certain producers are apparently covered for the entire three months.

Boston — To what level some consumers of flat-rolled steel will rebound from the holiday slackening is problematical. Some consumers have relaxed their pressure for steel but have asked mills to suspend shipment on only a negligible tonnage. Many shops, where operating schedules are lower, are still accepting their full steel quotas, although some may not return to peak postwar activity. 1949 production progams in many instances are still in a state of flux and not until these are clarified will steel requirements be more definitely estimated for the next few months. Among flat-rolled products, only stainless may be classified as competitive with its price structure still mixed. Demand for electrical sheets are off for motors, but are heavier for transformers and other electrical equipment. One leading user of electrical grades is seeking several hundred tons ex-quota for first quarter, although time draws near for scheduling of semifinished steel for March rolling schedules.

Philadelphia—While sheet outlook continues strong for some months to come, some spottiness exists in this area. Several cancellations of orders have been made recently by manufacturers of light household appliances, deep freeze and air conditioning units of the heavier types. One district stove maker has canceled first-quarter tonnage of enameling stock allotted by one producer, which is a matter of special interest in view of the generally high pressure for this grade of sheet. Slackening in sheet demand for radios continues to be cushioned by steadily increasing requirements for television. Overall needs of stamping shops continue well in excess of supply. Shortage of galvanized sheets continues pronounced.

Cleveland — Flat-rolled carbon steel products remain in heavy demand. Purchasers are increasingly cautious but have not made significant reductions or cancellations of orders. Demand for conversion ingots is at such a high level one producer is unable to fill all orders it received for February delivery.

Cincinnati — Demand for sheets continues persistent with mills de-

. . . when machine-builders "buy the idea" of AMERICAN PHILLIPS SCREWS

PRODUCTION "PAYOFFS" climb up toward jackpot levels, where American Phillips Screws are policing costs in all assembly departments. Workers work faster and better. Shiny surfaces are never gouged. For American Phillips Screws and drivers are fumble-proof, skid-proof, slash-proof. And they can be handled *by anyone* with such ease and speed that time-savings average *50% over slotted screws.*

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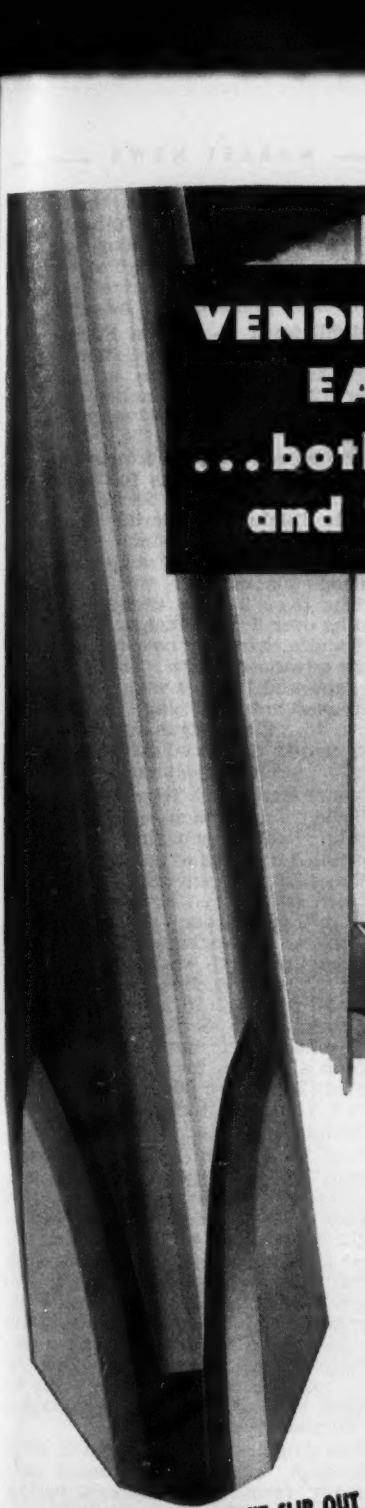

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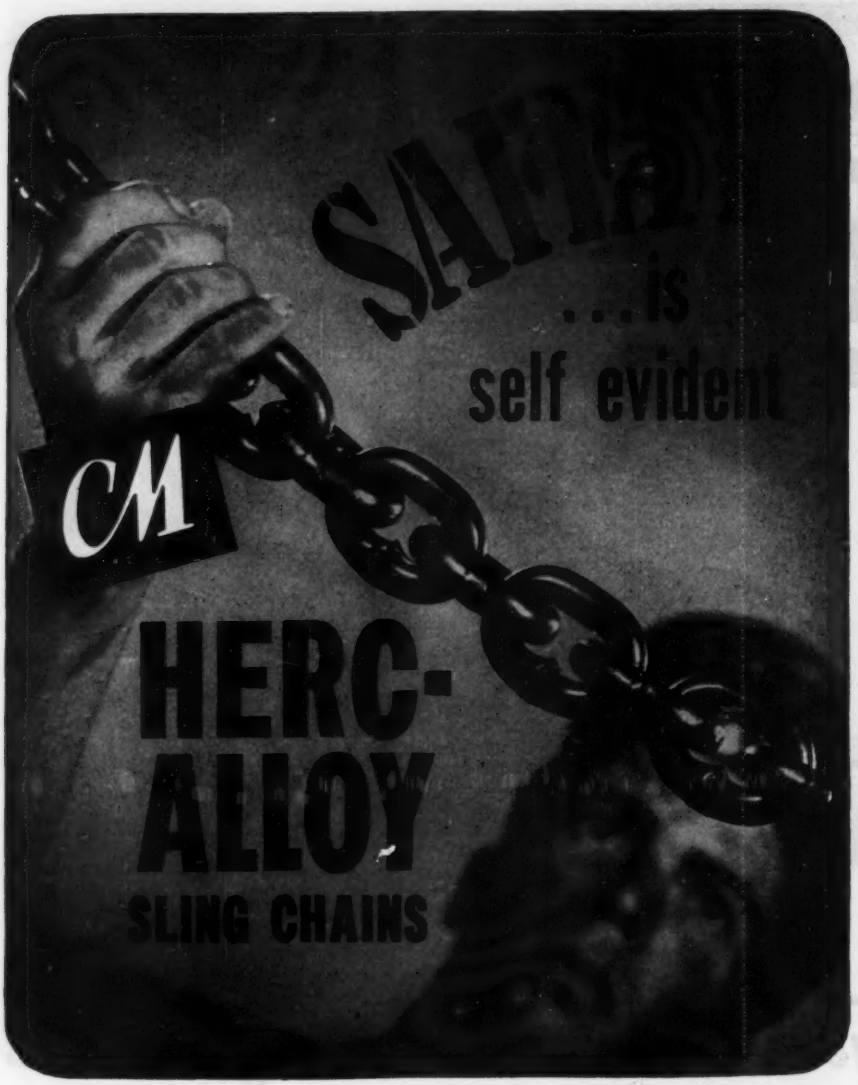

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clining to predict when they may become more plentiful. Cutbacks are appearing in needs for household appliances, but this tonnage is quickly absorbed by other fabricators who have been pressing for more sheets.

Middletown — Armco Steel Corp. has increased carbon hot-rolled sheet gage and width extras as follows: Over 12 to under 24 inches, 25c per 100 lb; 24 to 64, inclusive, 10c; over 64 to 72, inclusive, 15c. Pickling extra was advanced 15c for all gages; gage and width extras for hot-rolled strip were advanced $8 to $10 per ton in thickness ordering limits of 0.2299-inch to 0.0449-inch. Pickling extras for hot rolled strip were advanced 10c on all thicknesses for widths over 3 to 6 inches; 15c for widths over 6 to 12 inches. Gage and width size extras on cold-rolled sheets were advanced $2 to $10 a ton for 17 gage and heavier with the largest increases noted in gage range from 10 to 13. Size extras for enameling iron sheets advanced $1 to $4 a ton for 15 gage and heavier.

Youngstown — Youngtown Sheet & Tube Co. has advanced size, length, pickling and resquaring extras on hot-rolled sheets and strip. The company's extras generally follow the pattern established by other producers, although size extra are applicable to a greater number of width ranges up to 48 inches as follows: Over 12 to 15 inches, over 15 to 20, over 20 to 23 15/16, over 23 15/16 to 28, over 28 to 48. Length extras on cold-rolled sheets have been advanced 20c on all gages for lengths 30 to 60 inches; 25c, under 30 to 18 inches; 35c under 18 to 12 inches.

Birmingham — Sheet mills here ended 1948 with substantial backlogs. A great deal of sheet moving this month will be against late 1948 orders. Most sheet users expect as tight a situation in the product this year as was evident throughout 1948.

St. Louis — Sheet demand in this district holds steady. Business uncertainties in the metal trades have not been reflected in sheet order cancellations or postponements. One sizable conversion job, however, was reported held up until the Washington scene clarifies.

Los Angeles — Production in sheet consuming plants has bounced back sharply from a pronounced holiday letdown. Demand for rolled steel products is heavy, although there is growing disposition among buyers to operate on a hand-to-mouth basis.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 100

New York — Four state projects, involving bridge and road work, are up for bidding Jan. 12, with tonnage ranging from 200 to 770 tons. Private work is scattered and involves relatively small tonnage. However, there is far more cumulative demand than there is supply. Reinforcing steel sellers claim there has been little easing in supply since the end of the war and they contemplate no early betterment.

Seattle — Pacific northwest rolling mills closed a record production year with sizable backlogs which will extend well into 1949. Several major projects involving reinforcing bars are to be placed in the near future.

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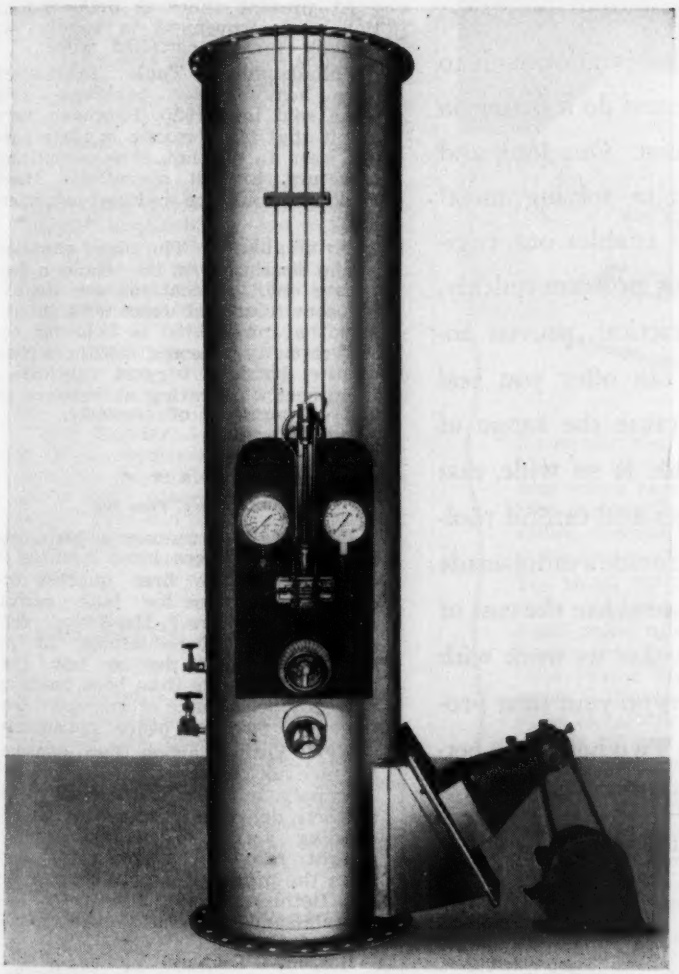

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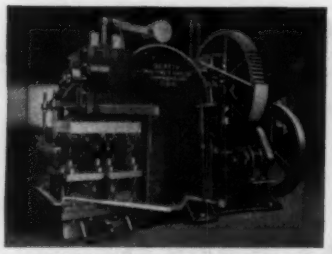

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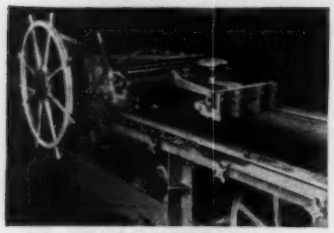

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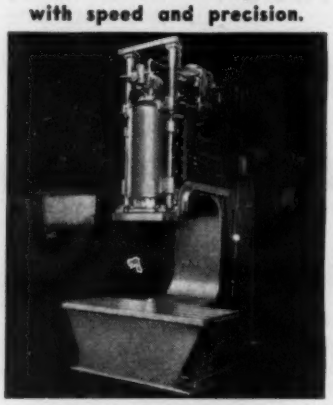

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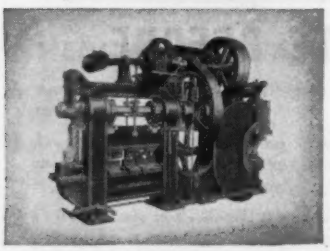

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Plates . . .

Plate Prices, Page 101

Boston — Plate tonnage for general distribution is constantly narrowing with heavier allocations against certified programs ahead. Some engineering work involving plate requirements is not yet complete and this holds up some specifications. A spurt in already heavy certified tonnage, currently near 40 per cent of capacity, is likely late this quarter. Plate shops are experiencing only a slight decline in end use demand for fabricated goods and this is more than offset by the contraction in the tonnage of plate available for open distribution.

New York — Several tank jobs have been placed recently, including 1050 tons of plates for five tanks for the Sinclair Refining Co. for erection at Jacksonville, Fla.

At present there is little indication of improvement in supply, especially for noncertified work.

Philadelphia — Tank fabricators have heavy order backlogs, with some sold into 1950. However, they admit that if an easing in plate supply were to develop, thus permitting a return to full operations, these backlogs could be reduced considerably.

Birmingham — The plate situation in the district is, on the whole, a desperate one. Allocations are depriving some essential users with the result that production is held far below capacity in some instances. One of the district's biggest fabricators is currently operating at between 35 and 40 per cent of capacity.

Steel Bars . . .

Bar Prices, Page 100

Pittsburgh—Inventory adjustments in a few instances have resulted in openings in the first quarter operating schedules for both carbon and alloy bars. However, sellers claim the reductions in allotments sought by a few customers have more than been made up by ready acceptance of increased tonnage on part of other consumers.

New York—Carbon bar consumers face not only continued stringency in supply, but also an early increase in their delivered prices, due to the pending six per cent increase in freight rates. Current rates here from the principal supply centers are 26c Bethlehem, 49c Johnstown, 53c Buffalo and 56c Pittsburgh, exclusive of tax.

Boston — Demand for bars is spottier in industrial consumer lines, but only scattered requests have been received for postponement of first-quarter tonnage. Textile mill equipment builders are reducing production schedules 5 to 10 per cent, chiefly by eliminating overtime. Buying by domestic textile mills has passed its peak and adverse dollar exchanges abroad are affecting foreign orders.

Cleveland — Demand for hot-rolled carbon bars continues far in excess of supply, and consumers are still calling at steel company offices in hope of getting more tonnage. First signs of a weakening in bar demand likely wil appear in sales of cold-finished.

Tubular Goods . . .

Tubular Goods Prices, Page 101

Pittsburgh — Producers of welded stainless steel tubing and pipe have increased quantity extras under schedule 10 for quantities 2500 feet or pounds and under. They also altered the quantity brackets. The revised percentages for respective quantity brackets are as follows: Under 75 pounds or feet, 100 per cent; over 75 to 150, 75 per cent; over 150 to 300, 50 per cent; over 300 to 500, 25 per cent; over 500 to 1000, 17.5 per cent; over 1000 to 2500, 7.5 per cent. For the first three brackets the percentages were raised 20, 25 and 20, respectively. The succeeding brackets previously were over 300 to 600 feet, 15 per cent; over 600 to 1250, 7.5 per cent; 1250 to 2500, 5 per cent. One company has adopted a similar quantity schedule for seamless stainless steel tubing and others are soon expected to follow. Producers also have revised jobbers' discount to a flat 5 per cent on shipments of stainless tubing into stock or for direct routing to customer. Formerly, these discounts were from 5 to 7.5 per cent on direct shipments; 5 to 10 per cent on shipments for stock.

Jones & Laughlin Steel Corp. revised upward the "sheet of extra additions" applicable to hot-rolled carbon electric welded tubing Jan. 3, to provide for the advance in extras for hot-rolled strip. Other producers are contemplating similar action.

Boston — While demand for merchant steel pipe remains heavy, distributors are experiencing reductions in forward order backlogs up to 50 per cent in some instances.

Los Angeles — There is no letup in pipe requirements, although increasing production is bringing supply a little nearer demand. Completion of year-end inventory-taking and the inception of 1949 budgets has brought a renewal of the brisk buying.

Tool Steel . . .

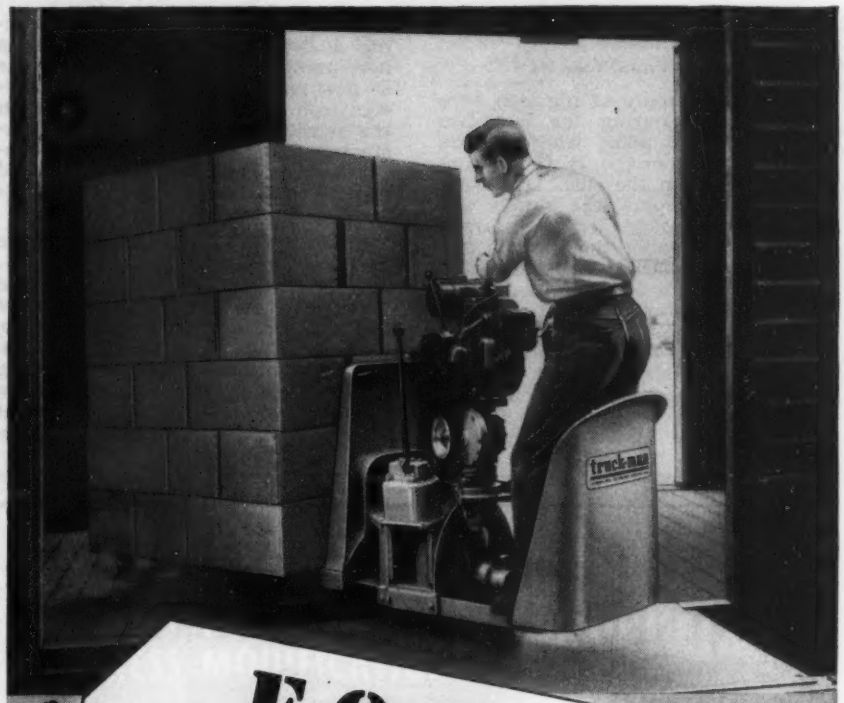
Tool Steel Prices, Page 101

Pittsburgh — Tool steel producers are experiencing a marked lull in new business, reflecting accumulation of inventories on the part of tool makers. The industry advanced prices 10 per cent last August, but granted tool makers until Nov. 30 before the new schedule would become effective.

Semifinished Steel . . .

Semifinished Prices, Page 100

Pittsburgh — Semifinished steel conversion deal negotiators are running into considerable difficulty in finding new customers. Metalworking companies apparently are unwilling to gamble on making long-term commitments for sheets and other steel products, with the exception of pipe, at previously exorbitant high prices demanded. Hot and cold-rolled sheets currently are hard to move at $150 to $160 a ton, particularly for odd sizes. This compares with $250 to $300 six months ago. Pipe prices continue to command premium mark-ups, with sales still above $200 per ton.



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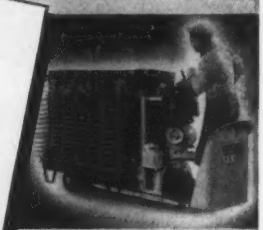

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Pig Iron . . .

Pig Iron Prices, Page 102

Boston — Supply of pig iron here has improved during the last two months to the point where severe pressure for tonnage is the exception rather than the rule. Although there is no surplus, the supply situation is no longer critical. Lower melt by the smaller shops and a few of the larger ones is one factor and this has permitted some foundries to increase the ratio of iron to scrap in mixtures without building up any substantial inventory. Shipments of iron from the Mystic furnace at the current rate seem assured for months ahead.

New York — With a number of small jobbing foundries experiencing a decline in bookings, there is less pressure for pig iron. Insofar as new purchases are concerned, foreign iron is now virtually a drug on the market. In some scattered instances foundries have actually canceled orders. However, sellers have had no difficulty whatsoever in diverting the iron elsewhere.

Philadelphia—While slowing down in some directions, pressure for domestic iron is still strong. Even foundries now forced to fight for business generally are disposed to take in as much iron as they can get on the theory that by stepping up the ratio of iron in melt they can be more competitive under present conditions. Cast scrap prices are declining, but are still above pig iron.

Pittsburgh — Merchant pig iron supply has shown no signs of significant easing despite marked reduction in operating schedules among jobbing foundries. Steelmaking iron still is in heavy demand and foundries in the heavy goods industries are just as insistent in their requirements for iron as at the beginning of 1948. Heavy demand for ingot molds continues, with supply restricted, due in part to pig iron shortages. Carnegie-Illinois Steel Corp. blew out its No. 2 blast furnace at Clairton Works on Jan. 4 for relining.

Chicago — Many foundries have been slow in starting up after the holidays, pressure on pig iron suppliers for deliveries being lessened in consequence. The wide variance between iron and scrap prices and the low ratio of iron in the melt, however, has kept demand in excess of supply even in many of the jobbing foundries which have been adversely affected by lowered sales volume.

Buffalo—District foundries came back surprisingly strong last week after the holiday suspensions, with a number of melters reporting output at a higher daily average rate than for December. Some interests believe operations will be on the upgrade over the next few months.

Cincinnati — Foundrymen have ceased their frantic appeals for pig iron deliveries, a reflection of the lull in demand for castings. Shipments of pig iron are holding closely to previous levels and foundries are accepting all consigned. The lowered melt also means a reduction in proportion of scrap used.

Birmingham—Demand for pig iron continues unabated, even though some slackening in foundry activity is evident in the district. Pipe plants, in particular, report operating schedules could be materially improved were the necessary iron available.

Seattle — Foundry operations have declined due to seasonal conditions, but more work is expected to develop within 30 days. Plants report that pig iron is now in ample supply while cast iron scrap now exceeds demand, although the going price is still $50 per gross ton for cupola cast.

Structural Shapes . . .

Structural Shape Prices, Page 101

Boston — More public works and less industrial and commercial building appear ahead. The former will not make up all the difference and more structural fabricators expect less volume of business over the coming months. Current tonnage up for estimates is light with bridge programs lagging, except in Connecticut where bids on about 30 structures will be taken during the year. Shipbuilding will take more structurals. Smaller sections, if available, will be in strong demand. Decline in structural inquiry is in no way easing tightness in plain material which will be parcelled out sparingly to fabricators without certificates for some time.

Philadelphia — While sheet outlook continues spotty. Order backlogs have declined slightly, although certain fabricators are booked six to eight months ahead on the basis of present availability of steel.

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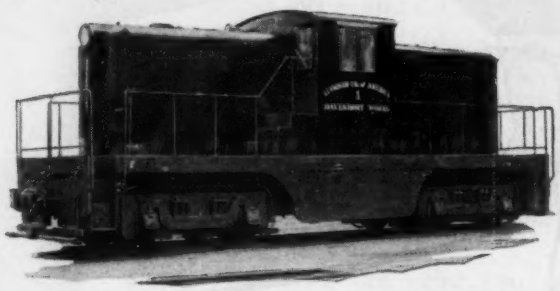

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Stainless Steel . . .

Producers revise quantity extras and jobbers' discounts on stainless steel tubing

Stainless Steel Prices, Page 101

Cleveland — Republic Steel Corp. has revised some base prices; extras and discounts on stainless steel. Changes in base prices and extras average about a 5 per cent reduction.

Base price reduction applies to stainless forging billets of the 300 and 400 series and tends to bring Republic into line competitively on that product.

Quantity extras on all standard forms of stainless products are revised downward. Base quantity is 10,000 pounds. A new concession to customers is the freedom of a buyer to combine certain widths and lengths of stainless sheets of one thickness, grade, and temper, where ordered at one time for shipment at one time, to take advantage of the lowest possible extras on quantities.

Other revisions in extras concern polishing of stainless sheets and packing of sheets and strip.

On stainless sales, Republic is allowing as of Dec. 28 a 5 per cent discount to warehouses whether the tonnage is for warehouse stock or for delivery on warehouse order directly from the mill to consumer. Until last August, Republic allowed a 10 per cent discount on stainless for warehouse stocks and 7-1/2 per cent on shipments sold by warehoues for delivery directly from mill to consumer. In August, the 10 per cent discount was eliminated.

Jessup Steel Co. has followed other members of the industry in revising quantity extras for its solid stainless steel products. No revision is contemplated on stainless-clad.

Pittsburgh — Revisions downward in some price extas of stainless steel products manufactured by Allegheny Ludlum Steel Corp. were made effective as of Jan. 3. Quantity extras were reduced from 5.75 cents to 1.75 cents per pound, applying on all grades of all stainless products except tubes and castings. Stainless steel sheet gage extras were reduced in some instances. Gages 23 to 26, inclusive, were reduced 2 cents per pound; gages 21 and 22, 1 cent per pound. Simultaneously, a slight reduction in packaging extras for stainless steel strip was announced.

Philadelphia—Stainless steel price schedules continue to undergo adjustment. One mill at Washington, Pa., and another at Baltimore have set up new schedules. Another producer at Reading, Pa., following changes in early December, has made some revisions effective early this month.

Iron Ore Prices Advance

Cleveland — Cleveland-Cliffs Iron Co. has sold substantial tonnages of iron ore based on $7.20 per gross ton, delivered at lower lake ports, for Mesabi Range nonbessemer ore, 51.5 per cent iron natural content, future increases or decreases in upper lake rail freight, handling charges, or taxes thereon to be for buyer's account. Differentials for Old Range and bessemer grades will be the same as in 1948. The new prices absorb the 1948 increase in upper lake rail freight, which was paid by the purchaser, and adds about 86.5 cents per ton net to the amount paid last season.

Contracts for the new season were made earlier than usual this year to satisfy consumers who wished to be assured of adequate supplies. Consumption is expected to continue at a high level this year and some furnace operators are concerned regarding the supply outlook.

The new iron ore price represents an increase of only 45.5 per cent from the last prewar year compared with increases of over 100 per cent in labor cost in underground mines during the same 10-year period; of 62.5 per cent in finished steel; 112.3 per cent in wholesale commodity prices; and 162.3 per cent in scrap.

Production from open-pit mines in recent years has so accelerated the depletion of those properties that production from underground mines in increasing tonnages is essential. This underground production must be encouraged, Cleveland-Cliffs officials say, by a fair price which takes into consideration the higher cost of that type of mining. Since the 1948 ore prices were announced last spring, increases in the cost of mining ore and transporting it to lower lake ports have been so great as to offset nearly all of the price increase.

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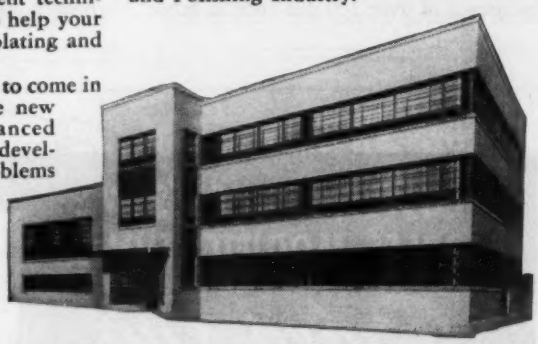

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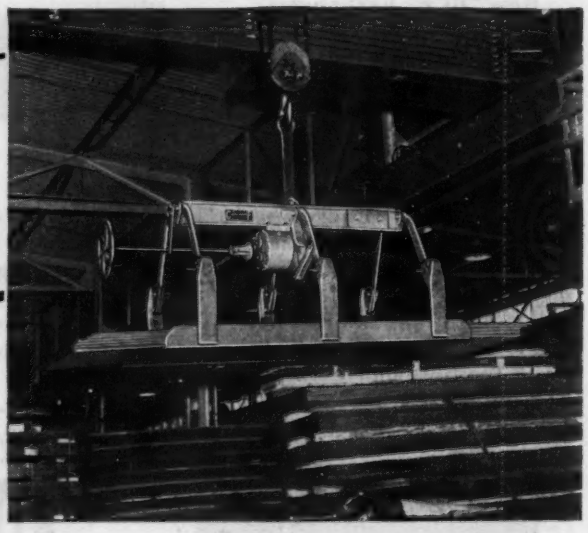
Handle Sheets with C-F LIFTERS



Handle loose or bundled sheets with one of these C-F Lifters and you save TIME and SHEETS, because C-F Lifters, under one man end control, can handle more sheets per load safer, faster and more economically. Tong action grips loads tightly, yet design features like wide bearing surfaces give full protection to stock edges. End control of C-F Lifters permits closer stocking of piles—resulting in more efficient use of storage facilities.

C-F Lifters are available in capacities from 2 to 60 tons or larger, in standard or semi-special designs.

Write for the bulletin "C-F Lifters"

CULLEN-FRIESTEDT CO.
1308 S. Kilbourn Ave., Chicago 23, Ill.

HANDLE SHEETS with C-F LIFTERS

Scrap . . .

Price tone weakens on light sales. Cast grades drop sharply in some districts

Scrap Prices, Page 106

Chicago — While dealer scrap prices are lower, virtually all grades being quoted at least $2 off, buying continues so light as to make accurate price level determination difficult. No. 1 heavy melting steel scrap was quoted $2 lower at $39.50 to $40.

The small volume of cast scrap sales last week was at substantially lower price, and railroad lists which closed during the week were markedly lower also.

Philadelphia — Open-hearth steel scrap prices are nominally unchanged, but an early reduction is expected. Most mills have heavier inventories for this season than at any time since before the war. They still want more, but are disposed to move slowly. Low phos scrap has declined $1 to $2 a ton. Bar crop, plate, punchings and structurals are now down to a range of $48 to $49, delivered. Borings and turnings are firm. Demand for borings for chemical purposes has improved. Cast grades continue to decline.

New York — Brokers have reduced their buying prices about $2 a ton on heavy breakable cast to a range of $55 to $56, f.o.b. shipping point, and $1 a ton on unstripped motor blocks to a range of $52.50 to $53.50. Other cast grades are unchanged.

Pittsburgh—Signs of growing easiness in the scrap market are becoming evident even though speculation on lower prices remained unverified last week for open-hearth grades. Good inventory position of most consumers has encouraged greater emphasis on tightening inspection of shipments and eliminating freight absorption as much as possible. Some mills have abandoned, at least partially, the practice of insisting customers return equivalent scrap per tonnage of steel received because of freight absorption involved and poor quality scrap received in some instances. Reflecting greater emphasis on selectivity in respect to mill scrap purchases, is the report that mills will attempt to establish differentials of $2 to $3 a ton between Nos. 1 and 2 heavy melting steel, also Nos. 1 and 2 bundles. No significant cast scrap transactions have been noted despite reduction in dealers' offering prices of about $2.

Cleveland — Prices on open-hearth scrap are showing a tendency to decline as various steel mills remain out of the market. One Ohio mill bought 10,000 tons of No. 2 heavy melting steel and No. 2 bundles for $40 a ton delivered, approximately $2 below formula and also without any freight springboard. Reflecting good inventories, one steel producer last week quit requiring some of its customers to return scrap in return for steel and reduced the amount it will pay for earmarked material.

Buffalo—No tonnage sales of any consequence were reported here last week to establish new price ranges, but the undertone was weak. Mills canceled unfilled orders at expiration of contracts. Weaker tendencies

were especially noted in cast iron grades. One dealer placed the market on mixed cupola cast at $55 compared with the present range of $63 to $65.

Cincinnati — Scrap maket is definitely softer, although quotations are holding fairly well. Resistance to prices is noted particularly on tonnage taking high freight charges.

Birmingham—Scrap prices for the most part are easier with bookings occasionally somewhat below formula levels. The market for No. 1 cupola cast is so weak brokers issued no quotations. Guesses ranged all the way from $60 to $70 on the absence of recent sales.

St. Louis — Up to last mid-week no new buying had occurred in scrap to establish a price trend following the year-end lull. At the year-end, nearly all mills and big scrap consumers canceled expired orders and as many unexpired as possible.

Seattle — Scrap market has eased considerably and receipts have increased to the point where mills are adding to inventory.

Warehouse . . .

Warehouse Prices, Page 103

Chicago — Higher quotations are being figured by a number of important warehouses in reflection of increased hot and cold-rolled sheet and strip extras recently imposed by a number of producers. Lack of uniformity in these extras is making the warehouse pricing task a more difficult one than is usually the case when prices change. The increases resulting from higher extras will overshadow those which will be necessitated by higher freight rates, one warehouseman stating that the effect of the latter will be not more than 5 cents per hundred pounds with 2 cents being the minimum.

Pittsburgh — Stainless steel distributors have adjusted prices in line with action taken by suppliers in recent weeks. Some warehouse interests report suppliers are now granting a 5 per cent discount applicable on shipments either for stock or direct to customer. Similar price action has been taken by distributors in adjusting sheet and strip quotations in line with new extra lists adopted by suppliers.

Electro Manganese Cuts Price

Minneapolis — Electro Manganese Corp. reduced prices on electrolytic manganese, effective as of Jan. 1. Electrolytic manganese has declined in price steadily over the last few years and is now quoted as follows: Less than drum quantities (250 lb net), 35.00c; 1 drum to 1999 lb, 32.00c; 2000 to 35,999 lb, 30.00c; 36,000 lb and over, 28.00c. The premium for hydrogen-removed metal is 1.50 cents per pound. Prices are f.o.b. cars Knoxville, Tenn., with the cheaper of rail or truck freight charges allowed to any point of destination east of the Mississippi river, not including unloading or local delivery charges; on shipments west of the Mississippi, freight allowed equivalent to the cheaper of rail or truck freight rates in existence between Knoxville, Tenn., and St. Louis.

New fastening operation SAVES 14c PER UNIT

Holland Furnace Company cuts assembly costs with the ACME-MORRISON Metal Stitcher

The Holland Furnace Company, Holland, Michigan, used to spend almost 17½ cents per assembly to fasten asbestos cloth to a steel frame.

Now, with the Acme-Morrison Metal Stitcher, the company makes this same assembly at a cost of about 3½ cents, and the finished job is better because the stitches make a stronger fastening!

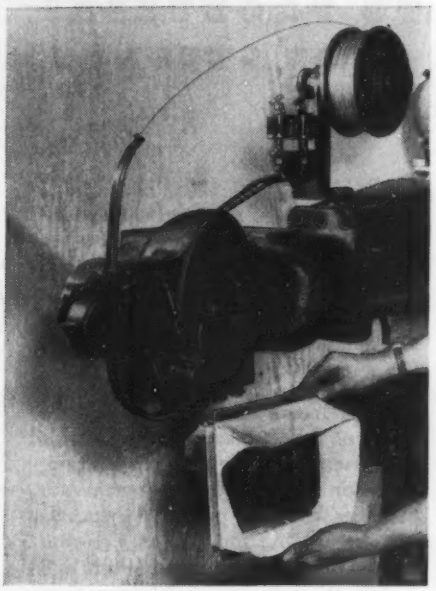
The biggest saving is in labor. With the old-type method (rivets), they made eight assemblies per hour. Using the Acme-Morrison Metal Stitcher, they have speeded production to 60 assemblies per hour.

Material costs have been cut, too. Formerly, the furnace company used 12 to 16 rivets per assembly at a cost of more than one cent per assembly. Now they use 15 to 20 zinc-coated aircraft-quality wire stitches, costing less than half a cent per frame.

You, too, may be able to save time and money with an Acme-Morrison Metal Stitcher. This modern machine fastens metal to metal or nonmetallic materials to metal. The secret is a wire stitch that works like your office stapler. No pre-punching is required. Acme-Morrison Metal Stitchers replace rivets, screws, nails, bolts, and spot welding.

For further details about what this time-saving, money-saving Metal Stitcher can do for you, mail the coupon today.

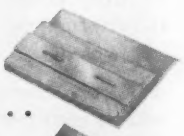
STITCHING WIRE DIVISION
ACME STEEL COMPANY
NEW YORK 17 CHICAGO 8
ATLANTA LOS ANGELES 11



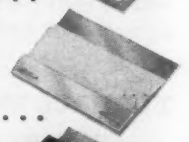
Operator uses an Acme-Morrison Metal Stitcher with a turned head to stitch asbestos cloth to a steel frame. The Holland Furnace Company has been using this method of assembly since 1946.

A few of many combinations

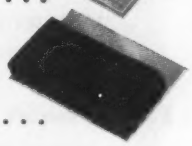
Aluminum, plywood, and brass stitched together . . . .



Aluminum, leather, and copper stitched together. . . . . .



Textile stitched to aluminum . . . . . .



Cross-section view of a flat stitch

ACME STEEL COMPANY, Dept. S-19
2840 Archer Avenue
Chicago 8, Illinois

Gentlemen:

Please send me further details about the Metal Stitcher.

Name_____

Company_____

Address_____

City_____ State_____

An Important Announcement

TO PRODUCERS OF STEEL

FURNACE ENGINEERS, INC., nationally noted for the design, construction and installation of all types of heating and heat treating furnaces, has now expanded its staff and facilities to include designing, construction and rebuilding of open hearth furnaces.

The engineers who will conduct this phase of F.E.I. business have a wide background of experience in the construction and operation of open hearth furnaces. They are prepared to handle the entire job, from original determination of needs through design and construction to successful operation.

The F.E.I. trademark on any piece of equipment is your guarantee of accuracy, dependability and efficiency in performance.

We will be very glad to consult with you on your needs without obligation to you. Just write or call.

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PITTSBURGH 26, PA.

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OPEN HEARTH FURNACES
CONTINUOUS BLOOM, BILLET and SLAB HEATING FURNACES
DIRECT FIRED COVER FURNACES
for sheet and coil annealing
SALT DESCALING FURNACES
for stainless steel sheet, bar and other products
GALVANIZING FURNACES
for tubes, sheet and metalware

F.E.I.

Ferroalloys . . .

Ferroalloy Prices, Page 103

New York — Molybdenum product prices were advanced as of Jan. 1. This was the first general increase ever recorded, barring a few minor adjustments and a switch in 1937 from a freight allowed to a f.o.b. plant basis. Molybdenum products consumed principally by the steelmaking industry are up about 18 per cent. Molybdic oxide, including briquettes, is now 95.00c per pound of molybdenum contained, as against 80.00c previously. Ferromolybdenum is now $1.10, against 95.00c.

Climax Molybdenum Co. has announced these prices, which now appear competitive with other producers, and is also quoting technical molybdic oxide at 95.00c per pound of molybdenum contained, against 80.00c previously; calcium molybdate, 96.00c against 80.00c; pure molybdic oxide, $1.10 against 95.00c; molybdenite concentrate, 90.00c against 75.00c; and nickel molybdenum, $1.75 against $1.50.

This seller is quoting molybdenum silicide at 80.00c per pound gross against 60.00c; anhydrous sodium molybdate, 54.00c against 50.00c; and cobalt-molybdenum, $1.85 against $1.60. The company also is quoting pure ammonium molybdate at 90.00c per pound gross (no previous prices listed. All prices are f.o.b. Langeloth, Pa., excepting molybdenite concentrate, which is f.o.b. Langeloth, Pa., or Climax, Colo. Terms are net cash, 30 days.

Seattle — G. H. Weissenburger, president, Keokuk Electro Metals Co., has announced start of operations at the Rock Island ferrosilicon plant, recently purchased from WAA.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2850 tons, tunnel construction, New York City Board of Water Supply, in connection with Navesink water shed, to Bethlehem Steel Co.

750 tons, steel sheet piling, Cleveland harbor, Army Engineer Corps, Buffalo, to Bethlehem Steel Co.

500 tons, state bridge work, Summit county, New Jersey, to Bethlehem Steel Co.

438 tons, H-section bearing piles, Army Engineer Corps, Kansas City, Mo., to Bethlehem Steel Co.

300 tons, 354-foot Montana state bridge, Missoula county, to Bethlehem Pacific Coast Steel Corp., Seattle; Hansen & Parr Construction Co., Spokane, Wash., general contract.

160 tons, Kingsway Jewish Center, Kings Highway and Nostrand Ave., Brooklyn, to Grand Iron Works, New York.

100 tons, Boys Center, Newark, N. J., to B. Katchen Iron Works Inc., that city.

100 tons or more, tunnel bracing, Fort Randall dam, near Lake Andes, S. Dak., Army Engineer Corps, Omaha, Nebr., to Commercial Shearing & Stamping Co., Youngstown.

100 tons or more, tainter gates, Army Engineer Corps, Nashville, Tenn., to Nashville Bridge Co., Nashville, Tenn., $269,000, and Columbia Machine Works, Berkeley, Calif., $249,745.

100 tons or more, 23 tainter gates, Clark Hill dam, Army Engineer Corps, Savannah, Ga., to Virginia Bridge Co., Roanoke, Va., $24,485 each.

STRUCTURAL STEEL PENDING

4000 tons, two hangars, Idlewild Municipal Air-

The Titeflex GRANNAN LUBRICATOR

for dependable, single line Centralized Lubrication

One TITEFLEX Grannan Lubricator is used on each bearing in the machine or mechanism. All lubricators are connected to one central line (by tubing or pipe) so that when oil or grease is introduced at the central point each lubricator delivers the correct amount to each bearing in the system. Positive, dependable lubrication is accomplished in a matter of seconds, regardless of the number of bearings in the machine or machines.

Look at these ADVANTAGES

- Fully Hydraulic in Operation
- Installs Directly into Bearing (lube lines unnecessary)
- Same Valve for all Lubricants (from light oil to heavy grease)
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- Through Flow (no cavities to retard lubricant)
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You will be amazed at the savings in time and lubricant when you use TITEFLEX Grannan Lubricators. Write for descriptive booklet.

Titeflex, Inc.
531 Frelinghuysen Ave., Newark 5, N. J.

Exclusive Manufacturers of Titeflex high quality products for more than 30 years
Sales Offices: CHICAGO CLEVELAND DETROIT PHILADELPHIA LOS ANGELES BOSTON SAN FRANCISCO TORONTO

port, New York, Stock Construction Co., that city, low on general contract for steel work.

2000 tons, 23-story office building, Uris Bros., 51st Street and Madison Ave., New York; bids asked.

775 tons, state expressway, Bronx, New York; bids Jan. 12.

555 tons, highway bridge, furnishing and erecting, Davis Dam project; bids Jan. 20, Bureau of Reclamation, Davis Dam, Nev.

375 tons, state road work, Woodbridge township, Middlesex county, New Jersey, bids opened Jan. 13; also 170 tons of reinforcing steel.

272 tons, state bridge work, Westchester county, New York, bids Jan. 12.

Unstated, steel for cable trays control gallery, Coulee dam; bids to Bureau of Reclamation, Denver, Jan. 11; spec. No. 2448.

REINFORCING BARS . . .

REINFORCING BARS PLACED

300 tons, St. Paul school, Yakima, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; W. W. Harpst, general contract.

170 tons, state road work, Woodbridge township, Middlesex county, New Jersey, bids opened Jan. 13; also 375 tons of structurals.

100 tons, state highway section, Glastonbury-Middletown, Conn., to Truscon Steel Co., Youngstown; D. Arrigoni, Middletown, O., general contractor.

REINFORCING BARS PENDING

770 tons, state expressway, Bronx, New York; bids Jan. 12.

270 tons, state bridge work, Westchester county, New York; bids Jan. 12.

257 tons, state bridge and road work, Bronx, New York; bids Jan. 12.

200 tons, state road work, Allegheny county, New York; bids Jan. 12.

Unstated, dormitory at Warm Springs, Mont., state hospital; Askevald Construction Co., Missoula, low $417,664.

Unstated, $700,000 addition University of Oregon library, Eugene; bids to Board of Higher Education, Salem, Jan. 25.

PLATES . . .

PLATES PLACED

1050 tons, five tanks, Jacksonville, Fla., for Sinclair Refining Co., to Chicago Bridge & Iron Works, Chicago.

500 tons, 15 tanks, Shell Oil Co., New York, to Chicago Bridge & Iron Works, Chicago.

PIPE . . .

CAST IRON PIPE PENDING

Unstated, soil pipe and fittings; bids to Bureau of Reclamation, Grand Coulee, Wash., Jan. 5.

RAILS, CARS . . .

RAILROAD CARS PLACED

Army Engineer Corps, Bismarck, N. Dak. to Haffner-Thrall Car Co., Chicago.

Canadian National Railways, 50 baggage cars, to the National Steel Car Corp. Ltd., Hamilton, Ont.

Reading Co., 250 hopper cars, to the Johnstown, Pa., plant of Bethlehem Steel Co.; these are in addition to the 500 recently noted as awarded by Reading to this plant.

LOCOMOTIVES PLACED

India Supply Mission, 140 steam locomotives, to Bethlehem Locomotive Works, Eddystone, Pa.; list comprises 120 2-8-2 type freight engines and 20 4-6-2 type passenger engines. Delivery to start about the middle of 1949.

RAILS PLACED

Baltimore & Ohio, 69,050 tons of new rail, including both 115-pound and 140-pound sections.

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complete line of

BALANCED METAL CLEANERS

- Cleaners for any soak, electrolytic, spray or tumble operation.
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Die for blanking and piercing 16-gauge hot-rolled steel . . . machined to tolerances of ± 0.002" in "HSC CW Oil" tool steel . . . preferred for its resistance to deformation and wear, its uniform machining properties, its dependability in heat treating.

An unusual assortment of fine tool steels . . . in various sizes, shapes, finishes, conditions . . . available promptly from the conveniently located warehouses of Hoyland Steel Company. Complete technical assistance in solving tool steel problems. Hoyland Steel Catalog-Work Book available on request.

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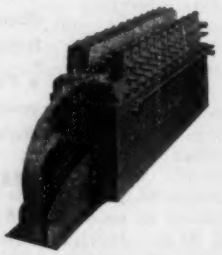
* Formerly McKinney—WITH ARDCOR IMPROVEMENTS



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AMERICAN ROLLER DIE CORPORATION

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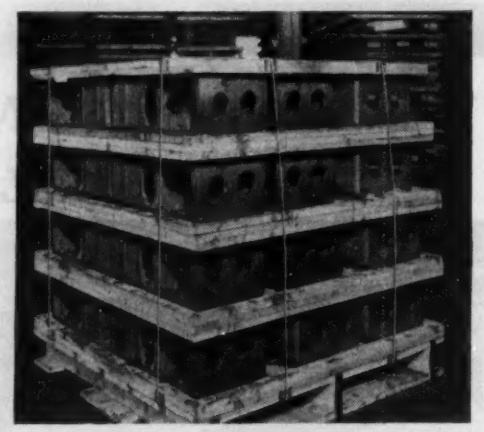
Transmission cases securely bound to pallet with Gerrard 10 gauge Round Steel Straps. (Photo by International Harvester Co., Industrial Power Division.)



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The use of Gerrard Round Steel Strapping will cut your material costs 30 to 50 percent.

The simplicity of Gerrard Steel Strapping operations will speed up binding and packaging procedures. Every Gerrard machine tensions the strapping, forms its own twisted seal, trimmed smooth with no exposed ends.

And the Gerrard method gives unrivalled protection. Packages are securely bound into rigid, pilferproof bundles. In crates, cartons, palletized loads, and carload lots of steel pipe, sheets and machinery, torsional sway is practically eliminated and damage claims are sharply reduced.

Gerrard Round Steel Straps come in a wide range of gauges to satisfy every commercial and industrial need. Gerrard Engineers will gladly help you solve your packaging problems. Their services are available *free of charge.* Write for our free books, *Blue Book of Packaging* and *Red Book of Carload Stowage.*

GERRARD STEEL STRAPPING COMPANY
(Formerly The Gerrard Company, Inc.)
4745 So. Richmond St., Chicago

USS UNITED STATES STEEL

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

ARCATA, CALIF.—Arcata Plywood Corp., G. L. Speier Co. and A. Rochlin & Co. are planning to build a $750,000 plywood plant.

RICHMOND, CALIF.—U. S. Rubber Co., 300 Second St., San Francisco, plans to build a $1 million rubber plant.

SAN FRANCISCO—James Allan & Sons, Third and Evans Sts., is planning to build a $350,000 meat plant addition; plans by Mario Ciampi, 333 Kearny St.

SAN FRANCISCO—H. Moffat Co., Third and Arthur Sts., plans to build a $450,000 meat plant addition; plans by Mario Ciampi, 333 Kearny St.

SAN JOSE, CALIF.—Levi Strauss & Co., 19 S. Market St. is planning to build a $200,000 factory.

STOCKTON, CALIF.—Rishwain Distributing Co., 949 E. Main St. plans to build a $300,000 garage with basement parking.

STOCKTON, CALIF.—West Coast Machinery Inc., 2200 Country Club Blvd., is going to build a $500,000 machinery plant.

CONNECTICUT

NEWINGTON, CONN.—Southern New England Telephone Co., 227 Church St., New Haven, is planning to construct a storage unit for supplies, equipment and automobiles on Day St. to cost $225,000; plans by Douglas Orr, 96 Grove St., New Haven.

NORWALK, CONN.—Zell Products Corp., 536 Broadway, New York, has awarded a $250,000 contract to E. & F. Construction Co., 94 Wells St., Bridgeport, for erection of a factory on Main St.

SEYMOUR, CONN.—Seymour Mfg. Co., 15 Franklin St., has awarded a $200,000 contract to W. J. Megin, 51 Elms St., Naugatuck, for the construction of a factory.

WEST HARTFORD, CONN.—Pittsburgh Plate Glass Co., 40 Chapel St., Hartford, plans to build a $250,000 warehouse on New Park Ave.; plans by Ebbets, Frid & Prentice, 862 Asylum Ave., Hartford.

GEORGIA

ATLANTA, GA.—Atlantic Coast Line Railroad, R. L. Groover, chief engineer, Wilmington, N. C., plans to construct five warehouses to cost $2 million.

COLUMBUS, GA.—Tom Huston Peanut Co., 900 Eighth Ave., is planning to construct a $250,000 warehouse and office.

VALDOSTA, GA.—Glidden Co., 52 Vanderbilt Ave., New York, is contemplating building a $100,000 plant addition to make gum, turpentine and rosin.

ILLINOIS

EAST ALTON, ILL.—Olin Industries, Western Cartridge Division, is planning to build a plant; plans by Russell, Crowell, Mulligardt & Schwarz, 1620 Chemical Bldg., St. Louis 1, Mo.

KANSAS

TOPEKA, KANS.—Union Pacific Railroad, W. C. Perkins, chief engineer, 1416 Dodge St., Omaha, Nebr., is planning to construct a $200,000 warehouse; plans by Griest & Ekdahl, Northeast Bldg.

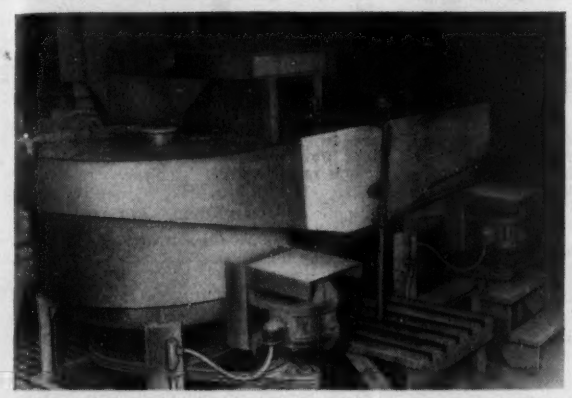
KENTUCKY

ST. MATTHEWS, KY.—Koster-Swope Buick Inc., 3790 Lexington Rd., Louisville, is planning to construct a $200,000 sales and service building.

MASSACHUSETTS

WEST LYNN, MASS.—General Electric Co. has awarded a $2 million contract to Thompson Starrett Co. Inc., 201 Devonshire St., Boston, for the construction of an administration and engineering building.

ZINC MILL HITS PAY DIRT
with
H & K PERFORATED METALS



"Turbo-Flo" Floatation Machine—Product of Coeur d'Alene Hardware & Foundry Co., Wallace, Idaho, manufacturers of quality mining equipment.

Carrying over into the discharge trough of this "Turbo-Flo" Floatation Machine are fine particles of high grade mineral zinc. H & K Perforated Metals are here, too—although you cannot see through the froth—in the form of a highly important steel baffle screen.

"H & K Perforated" may be the right answer to your screening or straining problem. Wide range of sizes, shapes and spacings in nearly every metal as well as plastics, fabrikoids, plywood and other sheet materials.

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5634 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.

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PITTSBURGH COMMERCIAL HEAT TREATING CO.

COMPLETE HEAT TREATING FACILITIES for Ferrous and Nonferrous Metals

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DIFFERENTIAL
STEEL CAR CO., FINDLAY, OHIO

Air Dump Cars, Mine Cars, Locomotives, Lorries AXLESS Trains and Complete Haulage Systems

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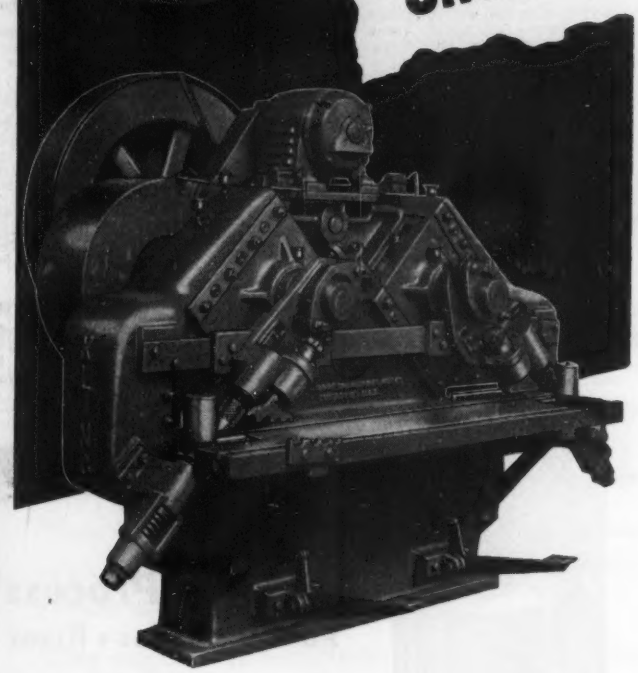
TIN PLATE
COP-R-LOY PIPE-SHEETS
Ductilite
THE MODERN TIN PLATE

WHEELING STEEL CORPORATION
WHEELING, WEST VIRGINIA

SLASH SHEARING COSTS
with
Kling Double Angle Shears



Especially designed for high speed, high production shearing. Will handle flat and round mild steel bars in addition to structural and bar angles. Round bars and bar angles are sheared on the left side, while the right side is used for structural angles and flat bars.

These special shears are equipped with automatic hold downs and "Y" type roller supports, also a removable guide for flat bar shearing. *Recommended for straight shearing only.* Mitreing can be accomplished by removal of holddowns. Available in four sizes.

Write today for full particulars.

Kling BROS. ENGINEERING WORKS

Manufacturers of Rotary, Plate, Bar Shears, Combination Shears, Punches and Copers, Single and Double End Punches, Angle, Beam, Bar and Plate Benders, High Speed Friction Saws.

1328S NORTH KOSTNER AVENUE CHICAGO 51, ILLINOIS

PRICES OF LEADING FERROALLOYS PRODUCTS

(*Continued from Page 103*)

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 18.5c per lb of contained Si; packed 19.90c; ton lots 21.00c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk 14.65-15c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe.). C.l., lump, bulk, regular 19.0c per lb of Si c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.90c per lb of alloy, ton lots packed 10.3c, 200 to 1999 lb 10.65c, smaller lots 11.15c. Delivered. Spot up 0.5c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr.). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk, 10.00c per lb of briquet, c.l. packaged 10.8c, ton lot 11.6c, less ton 12.5c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.0c, per lb of briquet, c.l. packed 10.8c, ton lot 11.6c, less ton 12.5c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching. **small size only.** Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained. f.o.b. Langeloth, Pa.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18%, and Si 53-59%). Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c less ton 22.55c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.). Contract, ton lots, 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.). Ton lot $1.28, less ton $1.35. F.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract, $160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: Ti 17-21%, C 3-4.5%). Contract, $175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

VANADIUM ALLOYS

Ferrovanadium: Open-Hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.), $3.10.

Vanadium Oxide: Contract, less carload lots, $1.20 per lb of contained V_2O_5, freight allowed.. Spot, add 5c.

Grainal: Vanadium Grainal No. 1, 93c; No. 6, 63c; No. 79, 45c, freight allowed.

TUNGSTEN ALLOYS

Ferrotungsten: (W 70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

BORON ALLOYS

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more. 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c.

Borosil: (3 to 4% B, 40 to 45% Si), $6.25 per lb contained B, f.o.b. Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 0.90 to 1.15%). Net ton to carload, 8c per lb, f.o.b. Suspension Bridge N. Y., freight allowed same as high-carbon ferrotitanium.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 50-60%, Mn 5% max., Si 8% max., C 0.5% max.). Contract, ton lot, 2" x D, $2.90 per lb of contained Cb, less ton $2.95. Delivered. Spot, add 25c.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). Carload, 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, Boron 0.55-0-75%). Carload, packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.25c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 16.50-17.00c per lb of alloy; ton lots 17.90-18.00c; less ton lots 19.40-19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Packed, lump, carload 11c, ton lots 11.25c, smaller lots 11.75c per lb alloy; freight not exceeding St. Louis rate allowed.

Ferrophosphorus (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base): Gross tons per carload, f.o.b. sellers' works, Mt. Pleasant, or Siglo, Tenn.; $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.10.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

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